Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form for the Academic

University: Middle Technical University
College: Electrical Engineering Technical college
Department: of Computer Engineering Techniques
Date Of Form Completion: 20 - 9 - 2021

Prof. Dr. Adel A. Obed
Dean's Name
Date: 25 / 10 / 2021
Signature

Dr. Ammar Hussein Mutlag
Dean's Assistant for Scientific Affairs
Date: 20/10/2021
Signature

Asst. Prof. Dr. Mohaad
Head of Department
Date: 20 / 10 / 2021
Signature

Quality Assurance and University Performance Manager Dr. Loay Talib Ahmed
Date: / /
Signature L. T. Ahmed

Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
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Academic Program Specification Form For The Academic College

Universitiy: Middle Technical University
College : Electrical Engineering Technical College
Department : Computer Engineering Technique
te Of Form Completion : 8\6\20 21

Dean ' s Name
Date : / /
Signature

Dean ' s Assistant For Scientific Affairs
Date : / /
Signature

Head of Department
Date : / /
Signature

Quality Assurance And University Performance Manager
Date : / /
Signature

TEMPLATE FOR PROGRAM SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAM REVIEW

PROGRAMME SPECIFICATION

This Program Specification provides a concise summary of the main features of the Program and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Program.

1. Teaching Institution	*Middle Technical University*
2. University Department/Centre	*Electrical Engineering Technical College*
3. Program Title	*Computer Engineering Technique*
4. Title of Final Award	Bachelor of Engineering Technology
5. Modes of Attendance offered	Annual
6. Accreditation	ABET
7. Other external influences	Labor market: where many seminars and meetings held to discuss academic and applied content with employers Universities and colleges that have majors debate: through the joint mechanisms work allows communication between the teaching staff and students for the purpose of going out a shared vision for the development and the development of academic content plans
8. Date of production/revision of this specification	*8\6\2021*

9. Aims of the Program

Academic program aims to graduate students majoring in technical architecture of computers and prepare them for the following:

1. to be able to work in areas that require linking computer networks as companies and communication technology companies and educational institutions.
2. To work on the infrastructure for e-government development and assistance to overcome the technical problems that may occur.
3. To work of industrial enterprises, especially in the areas that require computerized control operations.
4. To work on the renovation greeting structure of the old plants productivity and modernize operations to control the output used previously to modern processes controlling them with computers and remote.

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

A1. knowledge and understanding of telecommunications networks and how to connect them
A2. knowledge and understanding of the digital signal and analyzed
A3. knowledge and understanding of parts of the calculator and how to install it and address its problems
A4. knowledge and understanding of electronic circuits for different computerized devices and how to design
A5. knowledge and understanding of different programming languages used and how to take advantage of them
A6. know the types of digital dominants and how programming and design departments

B. Subject-specific skills

B1. Implementation and writing software for communications and dominants and engineering algorithms.
B2. Design and Implementation wired and wireless computer networks
B3. Diagnosis and treatment of faults occurring in the computerized devices and accessories.

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which the development of the students knowledge

Laboratory and practical workshops: that provide everything he needs from the student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to persons and property

Systematic training: systematic training aims to provide the experience the student and the labor market to enable the student to understand the practical application of curricula he studied.

Assessment methods

Interactive Rating: Rating process where the ditch directly between the student and teaching and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process.
Periodic tests editorial: The availability of these tests the knowledge of a faculty member for over a follow-up to the students to content academy and how to interact with information and observations given by teaching students.
Quarterly exam: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester, both academic and skill
The final exam: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year, both academic and skill.

C. Thinking Skills

C1. Planting the spirit of creativity among students and to ensure that find them innovative solutions to various problems
C2. Students develop the ability to work together effectively as teams graduated distinct results.
C3. Sense of responsibility among students and psychological configuration to carry the burden on their shoulders development.
C4. Development to ensure the values and perseverance to get the job done to reach satisfactory results.

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate creative side of the students.
Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and stimulate students to instead of all the efforts the crisis of the work of the various conditions and with several people.

Assessment methods

Direct assessment: Where is this Rating by faculty members directly and through observation of the interaction of students and their application of section sentimental ad valorem targets and record their observations about it
Operation projects and graduation projects: is assessing the student's ability to ACCT and to work in teams, consequences and solutions to various scientific problems facing students.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Linking internal and external networks wired and wireless
D2. Design and Implementation of printed circuit boards
D3. Installation and interfacing communications of computerized operations systems
D4. Skills of maintaining personal and industrial computerized systems

Teaching and Learning Methods

Laboratory and practical workshops: which provides everything a student needs from the expertise to help him develop the skills and practical side and the consolidation of the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to persons and property

Systematic training: systematic training aims to provide the experience the student and the labor market to enable the student to understand the practical application of curricula he studied.

Assessment Methods

Interactive Rating: Rating process where the ditch directly between the student and teaching and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process.

Periodic tests editorial: The availability of these tests the knowledge of a faculty member for over a follow-up to the students to content academy and how to interact with information and observations given by teaching students.

Quarterly exam: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester, both academic and skill

The final exam: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year, both academic and skill.

12. Awards and Credits	11. Program Structure			
	Credit rating	Course or Module Title		Level/Year
Bachelor Degree Requires (x) credits	4	Democracy and Human Rights	1	First Year
	4	Mathematics (I)	2	
	3	Engineering Drawing	3	
	4	Workshops	4	
	7	Electrical Engineering Fundamentals	5	
	6	Computer Organization	6	
	7	Computer Programming (I)	7	
	6	Digital Electronics	8	
	2	English	9	
	4	Computer Applications	1	Second Year
	4	Mathematics (II)	2	
	7	Microprocessor Architecture	3	
	6	Instrumentation and Measurements	4	
	6	Computer Programming (II)	5	
	6	Communication Fundamentals	6	
	6	Electronics	7	
	-	Training	8	
	2	English	9	
	4	Electronic Systems Simulators	1	3rd year Computer Electronic
	6	Engineering Analysis	2	
	6	Control Engineering Fundamentals	3	
	6	Power Electronics	4	
	6	Real Time Systems Design	5	
	6	Digital Signal Processing	6	
	6	Digital Controllers	7	
	6	Elective Course	8	
	-	Training	9	
	2	English	10	
	6	Smart Systems Modeling	1	4th year Computer Electronic
	6	Advanced Computer Technology	2	
	6	Computer Interface Circuits Design	3	
	6	Advanced Digital Electronics	4	
	6	Project Management	5	
	6	Computer Networks	6	
	6	Elective Course	7	
	4	Project	8	
	2	English	9	

	4	**Computer Networks Simulators**	**1**	**3rd Year** Computer Communication Network
	6	**Engineering Analysis**	**2**	
	6	**Control Engineering Fundamentals**	**3**	
	6	**Computer Networks Fundamentals**	**4**	
	6	**Real Time Systems Design**	**5**	
	6	**Digital Signal Processing**	**6**	
	6	**Digital Communications**	**7**	
	6	**Elective Course**	**8**	
	-	**Training**	**9**	
	2	English	10	
	6	**Computer Networks Protocols**	**1**	**4th Year** Computer Communication Network
	6	**Information Theory and Coding**	**2**	
	6	**Mobile Communications**	**3**	
	6	**Security of Computer and Networks**	**4**	
	6	**Project Management**	**5**	
	6	**Multimedia Computing**	**6**	
	6	**Elective course**	**7**	
	4	**Project**	**8**	
	2	English	9	

13. Personal Development Planning

Academic program accredited how my information essential to the student and skill provides can work on the same continuously develop and is also keen teaching staff on the estimated self-development of the student by urging students to look for problems within their field and then work to resolve this process and be under the supervision and follow up the teaching staff to provide advice and guidance sponsor planting right foundations for the process of personal development.

14. Admission criteria.

Admission criteria are determined annually by the specialized committees in the Ministry of Higher Education and Scientific Research, where inputs are accepting students as follows:

1- Graduates of the scientific branch(applied & biochemistry) and at a rate of at least 77%
2- Graduates of Preparatory School industrial and 10% of the country's top graduates and the following disciplines:
   A- specialty of Computer Maintenance
   B- allocate Communications
   C- specialty computer networks
   D specialty assembly and maintenance of computer
   E- Media Technology
3- Graduates of technical institutes

15. Key sources of information about the program

1. Specialized scientific books
2. Academic research
3. Internet informatics
4. Accumulated scientific expertise of the staff section
5. Nutrition feedback from the labor market

Curriculum Skills Map

please tick in the relevant boxes where individual Program Learning Outcomes are being assessed

				Program Learning Outcomes															
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	General and Transferable Skills (or) Other skills relevant to employability and personal development				Thinking Skills				Subject-specific skills				Knowledge and understanding			
				D4	D3	D2	D1	C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1
1st		Democracy and Human Rights		/			/		/	/	/		/	/			/		/
		Mathematics (I)			/	/		/	/	/			/	/	/		/	/	/
		Engineering Drawing		/	/		/	/			/	/		/		/	/		
		Workshops		/		/	/	/	/			/	/	/	/		/	/	
		Electrical Engineering			/	/	/		/	/	/	/	/	/	/	/		/	/
		Computer Organization		/		/	/	/	/	/		/	/	/			/	/	/
		Computer Programming (I)			/	/	/	/	/		/	/	/			/		/	
		Digital Electronics		/		/			/		/			/	/	/	/		/
		English			/	/		/	/	/			/	/	/		/	/	/
2nd		Computer Applications		/			/		/	/	/		/	/			/		/
		Mathematics (II)			/	/		/	/	/			/	/	/		/	/	/

		Microprocessor Architecture		/	/		/	/			/	/		/		/	/			
		Instrumentation and Measurements		/		/	/	/	/			/	/	/	/		/	/		
		Computer Programming (II)			/	/	/		/	/	/	/	/	/	/	/	/		/	/
		Communication Fundamentals		/		/	/	/	/	/		/	/	/			/	/	/	
		Electronics			/	/	/	/	/		/	/	/	/			/		/	
		Training		/		/			/		/			/	/	/	/			/
		English			/	/		/	/	/			/	/	/		/	/	/	
3rd Computer Electronic		**Electronic Systems Simulators**		/		/	/	/	/			/	/	/	/		/	/		
		Engineering Analysis			/	/	/		/	/	/	/	/	/	/	/			/	/
		Control Engineering Fundamentals		/		/	/	/	/	/		/	/	/			/	/	/	
		Power Electronics			/	/	/	/	/		/	/	/				/		/	
		Real Time Systems Design		/		/			/		/			/	/	/	/			/
		Digital Signal		/			/		/	/	/		/	/				/		/
		Digital Controllers			/	/		/	/	/			/	/	/			/	/	/
		Elective Course		/	/		/	/			/	/		/		/		/		
		Training		/		/	/	/	/			/	/	/	/			/	/	
		English			/	/		/	/	/			/	/	/			/	/	/

		English			/	/		/	/	/			/	/	/		/	/	/		
4th Computer Electronic		**Smart Systems Modeling**		/		/			/		/			/	/	/	/		/		
		Advanced Computer Technology		/		/	/	/	/			/	/	/	/		/	/			
		Computer Interface Circuits Design			/	/	/		/	/	/	/	/	/	/	/			/	/	
		Advanced Digital Electronics		/		/	/	/	/		/	/	/				/	/	/		
		Project Management			/	/	/	/	/		/	/	/			/		/			
		Computer Networks		/		/			/		/			/	/	/	/		/		
		Elective Course		/			/		/	/	/		/	/			/			/	
		Project			/	/		/	/	/			/	/	/		/	/	/		
3rd Computer Communication Network		**Computer Networks Simulators**		/	/		/	/			/	/		/		/	/				
		Engineering Analysis		/		/	/	/	/			/	/	/	/		/	/			
		Control Engineering Fundamentals		/			/		/	/	/		/	/			/			/	
		Computer Networks Fundamentals			/	/		/	/	/			/	/	/		/	/	/		
		Real Time Systems Design		/	/		/	/			/	/		/		/	/				
		Digital Signal Processing		/		/	/	/	/			/	/	/	/		/	/			
		Digital Communications			/	/	/		/	/	/	/	/	/	/	/			/	/	
		Elective Course		/		/	/	/	/	/		/	/	/			/	/	/		
		Training			/	/	/	/	/		/	/	/			/		/			
		English			/	/			/	/	/		/	/	/		/	/	/		

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Computer Engineering Technicals / Telecommunications Networks Computer
3. Course title/code	Computer organization
4. Programme(s) to which it contributes	First class of computer organization
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. Knowledge of major components and know the basic parts of the electronic calculator. 2. Knowledge of the main types of memory used in the calculator. 3. Knowledge of the CPU and components in the electronic calculator. 4. Possession of a scientific and practical skill of being able to diagnose faults and perform maintenance and repairs to the system calculator.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1-knowledge of the different stages of the development of electronic sense.
A2-knowledge of different types of electronic calculator and parts for major
A3- knowledge of the structural core of the memory and the various classifications of memory from the main memory and secondary memory
A4-knowledge of the structural core CPU
A5- know how data is represented inside the electronic calculator
A6- knowledge of the processor of the type 8085

B. Subject-specific skills

B 1 Ability to diagnose faults in the electronic calculator
B-2 - the ability to use meta own processor 8085
B 3 - the ability to know different types of electronic calculator
B4- the ability to program processor 8085

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop cognitive balance for students
Practical laboratory:, which provides each student the expertise to help develop practical skills side and consolidate the principles necessary to carry out the projects correctly

Assessment methods

Interactive tests: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester for academic and skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year for academic and skills

C. Thinking Skills

C1- Implant the spirit of creativity among students and to ensure that find them innovative solutions to various problems
C2- Students develop the ability to work together effectively as teams come out excellent result
C3- Sense of responsibility among students and psychological configuration to carry the burden on their shoulders Development

C4- Development to ensure the values and perseverance to get the job done to reach satisfactory results

Teaching and Learning Methods

Stimulate the creative side of the students and that by asking various scientific problems and the demand of the students find appropriate scientific solutions to them in different ways
Develop a spirit of cooperation between the students, through the formation of working teams and motivate the students to exert all the necessary conditions for the work of the various efforts and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through note student interaction during the lecture and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams, consequences and solutions to various scientific problems

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- Analysis methods of treatment the fault in the electronic computer
D2- Data analysis in the electronic computer
D3- acquire skill in the use of the language of the machine

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2,3	12	Lecture, laboratory	Introduction to Computer Systems, key parts of the computer system	Identify the main parts of the computer	Questions oral, daily exam
4,5	8	Lecture, laboratory	Structural of von Neumann	Knowledge of the main principles of Von neuman	Questions oral, daily exam
6,7	8	Lecture, laboratory	The representation of data in the computer and the various types of data	Understanding methods of data representation within the electronic computer	Questions oral, daily exam
8,9	8	Lecture, laboratory	Central processor unit inside the computer	Knowledge of different types of input, output in the computer	Questions oral, daily exam
10,11, 12,13,	16	Lecture, laboratory	Memory Modules	Identify the various memory types in the computer	Questions oral, daily exam
14,15	8	Lecture, laboratory	Input and output modules	Understanding the different types of Input and output devices inside the computer	Questions oral, daily exam
16,17	8	Lecture, laboratory	Structural of buses inside the computer	Identify the Buses that used in computer	Questions oral, daily exam
18,19	8	Lecture, laboratory	Machine and assembly languages		Questions oral, daily exam
20,21, ,22,23 24	16	Lecture, laboratory	8085 processor structure	Understanding the main components of 8085 MP	Questions oral, daily exam
25,26 27,28,	16	Lecture, laboratory	Instruction type of 8085	Knowledge of types of instruction that used in 8085 MP	Questions oral, daily exam
29,30	8	Lecture, laboratory	8085 programs	Understanding of different programs for 8085 MP	Questions oral, daily exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1- Digital Fundamental by Floyed 2-Ramesh S. Goankar, “Microprocessor Architecture, Programming and Applications with 8085”, 5thEdition, Prentice Hall

Special requirements (include for example workshops, periodicals, IT software, websites)	1- Digital Fundamental by Floyed 2-Ramesh S. Goankar, “Microprocessor Architecture, Programming and Applications with 8085”, 5thEdition, Prentice Hall
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	Introducing some communication applications and some practical applications in other fields
Minimum number of students	30 students
Maximum number of students	60 students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	*Middle Technical University*
2. University Department/Centre	*Electrical Engineering Technical College \ Computer Engineering Technique*
3. Course title/code	Computer Programming
4. Programme(s) to which it contributes	2020\2021
5. Modes of Attendance offered	Lecture \ laboratory
6. Semester/Year	Year
7. Number of hours tuition (total)	150
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course:	
1. Knowing the history of computers, programming languages and the types of programs	
2. Understanding the steps in making programs from design to execution	
3. Recognizing the types of algorithms, and focusing on flowcharts	
4. knowing how to write programs in C++ and how to handle different types of data	
5. knowing how to make decisions, as well as using different operators (mathematical, logical, relational, and Bit-Wise)	
6. Knowing how to use loops and break and continue	
7. knowing how to program using functions	
8. Learning how to use Arrays (1D and 2D)	
9. Learning how to deal with characters, text files and Pointers	

10· Learning Outcomes, Teaching , Learning and Assessment Method

A- Knowledge and Understanding

1. Knowing the history of computers, programming languages and the types of programs
2. Understanding the steps in making programs from design to execution
3. Recognizing the types of algorithms, and focusing on flowcharts
4. knowing how to write programs in C++ and how to handle different types of data
5. knowing how to make decisions, as well as using different operators (mathematical, logical, relational, and Bit-Wise)
6. Knowing how to use loops and break and continue
7. knowing how to program using functions
8. Learning how to use Arrays (1D and 2D)
9. Learning how to deal with characters, text files and Pointers

B. Subject-specific skills

1. Learning how to make an algorithm.
2. learning how to program and think logically
3. Writing programs in C++
3. Designing programs in the field of competence

Teaching and Learning Methods

Academic lectures: Providing a solid foundation upon which the development of the students' knowledge
Laboratory and practical workshops: it provides everything a student needs to help develop practical skills

Assessment methods

Interactive rating: depends on how much the student will interact and participate during the course.
Periodic written tests: Those tests provide the knowledge of how much students had understood the subject and took attention to the lecturers' notes.
Quarterly exam: to assess the student's interest and its interaction with the scientific and practical skills during the semester.
The final exam: to assess the student's interest and its interaction during the whole year.

C. Thinking Skills

1. Planting the spirit of creativity among students and to ensure that they find innovative solutions to various problems
2. Students develop the ability to work together effectively as teams.
3. Growing the sense of responsibility among students.
4. Developing the values of perseverance to get the work done.
5. Developing logical thinking.
6. Preparing the for the work after graduation.

Teaching and Learning Methods

Stimulating creativity
Teaching them how to work in groups and cooperate with each other.
Stimulating students to participate in class
Stimulate logic thinking.
Using electronic learning management systems to learn and communicate with students.

Assessment methods

Direct assessment: through observation
Practical programming projects to solve various scientific problems.

D. General and Transferable Skills (other skills relevant to employability and personal development)

1. Designing Algorithms.
2. Programming in C++.
3. Logic thinking.
4. Self-developing and preparing for the work market later on.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd, 3rd	15	Introduction (History of computers). Types of programs (Application and Systems). Programming languages (Machine, Assembly, and High-level language), Compilers and Interpreters, object file, executable file. Simple program in C++	Introduction (History of computers). Types of programs (Application and Systems). Programming languages (Machine, Assembly, and High-level language), Compilers and Interpreters, object file, executable file. Simple program in C++	lecture laboratory	Oral exam, paper exam
4th	5	Types of programming errors, Program development life cycle, Algorithms and Flowchart.	Types of programming errors, Program development life cycle, Algorithms and Flowchart.	lecture laboratory	Oral exam, paper exam
5th , 6th	10	Header files, Standard Input/Output, Comments in C++. Variables, Data Types, Declaration of variables, Constants, Statements.	Header files, Standard Input/Output, Comments in C++. Variables, Data Types, Declaration of variables, Constants, Statements.	lecture laboratory	Oral exam, paper exam

7th	5	Operators (Assignment, Arithmetic operators, Relational and Logical operators, Bitwise Operators, Increment and decrement, Cast operator, and Conditional operator), Precedence of operators.	Operators (Assignment, Arithmetic operators, Relational and Logical operators, Bitwise Operators, Increment and decrement, Cast operator, and Conditional operator), Precedence of operators.	lecture laboratory	Oral exam, paper exam
8th , 9th , 10th	15	Making Decisions (if, if-else statements), Flowchart for if-else statement	Making Decisions (if, if-else statements), Flowchart for if-else statement	lecture laboratory	Oral exam, paper exam
11th	5	Making Decisions (switch statement), using break statement with switch statement, Flowchart for switch statement	Making Decisions (switch statement), using break statement with switch statement, Flowchart for switch statement	lecture laboratory	Oral exam, paper exam
12rd, 13th , 14th , 15th	20	Loops (for, while, do-while), using break and continue statements with loops, Flowchart for loops.	Loops (for, while, do-while), using break and continue statements with loops, Flowchart for loops.	lecture laboratory	Oral exam, paper exam
16th, 17th, 18th , 19th , 20 , 21st , 22nd	35	Functions (Built-in function functions (Library functions), and User-Defined functions), Function prototype (Declaration), Function call, Passing arguments to a function, return statement, Value-Returning vs. Void (Non Value Returning) functions (Function with no argument and no return value, Function with no argument but return value, Function with argument but no return value, Function with argument and return value), Arguments passed by value and by reference, Recursion, Local and global variables	Functions (Built-in function functions (Library functions), and User-Defined functions), Function prototype (Declaration), Function call, Passing arguments to a function, return statement, Value-Returning vs. Void (Non Value Returning) functions (Function with no argument and no return value, Function with no argument but return value, Function with argument but no return value, Function with argument and return value), Arguments passed by value and by reference, Recursion, Local and global variables	lecture laboratory	Oral exam, paper exam

23rd, 24th , 25th	15	Arrays (One and two dimensional arrays, Arrays as parameters).	Arrays (One and two dimensional arrays, Arrays as parameters).	lecture laboratory	Oral exam, paper exam

26th	5	Handling and processing text files in C++	Handling and processing text files in C++	lecture laboratory	Oral exam, paper exam
27th , 28th	10	Character Sequences and String handling	Character Sequences and String handling	lecture laboratory	Oral exam, paper exam
29th , 30	10	Pointers	Pointers	lecture laboratory	Oral exam, paper exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	• Beginning C++, by Ivor Horton • C++ How To Program , by Paul J. Deitel • Starting Out With Programming Logic and Design, by Tony Gaddis
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	Students with some programming experience will usually perform better , also having the passion to learn programming will have a huge impact
Minimum number of students	20
Maximum number of students	40

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	College of electrical technique
2. University Department/Centre	Computer engineering techniques
3. Course title/code	digital electronics
4. Programme(s) to which it contributes	2020\2021
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	year
7. Number of hours tuition (total)	150
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
Scheduled to be a student able to aim	
1. understanding of digital systems to prepare and how to transfer them	
2. knowledge and understanding of the digital gates and methods of analysis and take advantage of them	
3. The knowledge and understanding of the design of digital circuits and analysis	

4. Knowledge and understanding of the use of digital circuits
5. learn methods of conversion to digital systems from analogue system to system, and vice versa

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding
A1.knowledge of digital systems and methods of preparation, including the conversion and utilization of the circuit analysis in programming
A2. knowledge of digital gates, types and how they are used in the formation of digital circuits as required of them by finding out the digital waves entering and leaving work
A3. ability to analyze the work of the various digital circuits in several ways and knowledge of emerging digital wave form
A4. ability to reach the simplest designs for various digital circuits and equivalents using multiple ways
A5. converting waves from analogue system to digital system and vice versa.
A6 . learn methods of designing digital circuits counters and time and other important constituencies in practice
B. Subject-specific skills
B1. - the simplest and best digital circuit design image
B2. the ability to use digital numerical order in the software processes and the conversion from one system to another
B3. digital circuit analysis and knowledge of its working methods and Astkhamadtha B4. circles container design parts of evicting non-digital and digital enter values in ways that certain designs and as required
Teaching and Learning Methods
Academic lectures: providing a solid foundation upon which to develop cognitive balance for students

Practical laboratory:, which provides each student Maihtaj him the expertise to help develop practical skills side and consolidate the principles necessary to carry out the projects correctly

Assessment methods

Interactive Rating: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester Bjanbhe academic skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year Bjanbhe academic skills

C. Thinking Skills

C1. implant the spirit of creativity among students and to ensure that find them innovative solutions to various problems
C2. students develop the ability to work together effectively as teams come out excellent result

C3. sense of responsibility among students and psychological configuration to carry the burden on their shoulders Development

C4. development to ensure the values and perseverance to get the job done to reach satisfactory results

Teaching and Learning Methods

Stimulate the creative side of the students and that by asking various scientific problems and the demand of the students find appropriate scientific solutions to them in different ways
Develop a spirit of cooperation between the students, through the formation of working teams and motivate the students to exert all the necessary conditions for the work of the various efforts and with several people

Assessment methods
Direct assessment: Where is this assessment by the teaching directly and through NOTE student interaction during the lecture and install notes about it Practical projects is to assess the student's ability to achievement and creativity and to work in teams, consequences and solutions to various scientific problems

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. transfer equations of the time domain to the frequency and vice versa.
D2. analysis equations and their use in the field of communications
D3. find different solutions to complex mathematical equations
D4. arrays and analyze and solve practical ways to take advantage of them

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2,3	15	Knowledge of digital systems and conversions from another form	Digital number system	Lecture, laboratory	Questions oral, daily test
4,5,6	15	Knowledge of digital gates and methods of use and benefits	logic gates	Lecture, laboratory	Questions oral, daily test
7,8,9	15	Knowing simplify circuit via map Karnagh	Karnaugh map	Lecture, laboratory	Questions oral, daily test
10,11, 12,13, 14,15	30	Knowledge of circuit design using calculations	Arithmetic operations	Lecture, laboratory	Questions oral, daily test

		necessary according to the required circuit			
16,17, 18,19	20	Circuit design on the container tippers and methods of analysis	Flip-flop	Lecture, laboratory	Questions oral, daily test
20,21, 22,23	20	The design of digital counters and how to analyze and uses	counters	Lecture, laboratory	Questions oral, daily test
24,25	10	Learning registers types and designs	registers	Lecture, laboratory	Questions oral, daily test
26,27, 28	15	Knowledge of types of	multivibrators	Lecture, laboratory	Questions oral, daily test

		multivibrators designs and uses process			
29,30	25	Design circuits converted from digital to analogue and vice versa	ADC and DAC	Lecture, laboratory	Questions oral, daily test

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Digital Fundamental by Floyed
Special requirements (include for example workshops, periodicals, IT software, websites)	1- Digital Fundamental by Floyed 2- Digital_Circuit_Analysis_and_Design_with_Simulink_Modeling_2nd_Ed by Steven T. Karris
Community-based facilities (include for example, guest Lectures , internship , field studies)	1- Digital Fundamental by Floyed 2- Digital_Circuit_Analysis_and_Design_with_Simulink_Modeling_2nd_Ed by Steven T. Karris

13. Admissions	
Pre-requisites	No requisites
Minimum number of students	67
Maximum number of students	90

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programmer's specification.

1. Teaching Institution	College of Electrical Eng. Techniques
2. University Department/Centre	Computer Eng. Techniques
3. Course title/code	Electrical fundamental
4. Programme(s) to which it contributes	Computer electronics, Computer networks
5. Modes of Attendance offered	Theory lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	180
8. Date of production/revision of this specification	2021\6\8
9. Aims of the Course	
1-Realization of basic parameters in electrical engineering and how to link these parameters. 2-To be capable of solving electrical circuits using different theorems.	
3-To be capable of using dc theorems to solve ac circuits	
4-Configuring 3 phase circuits ,vectors ,phase and total powers	
5-To be capable of linking electricity to magnetism	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1.Learning the basic parameters of the electrical circuit A2.Learning the basic theorems to solve electrical circuits A3.Figuring out the best and suitable theorem to solve different circuits. A4.Learning the basic parameters in electromagnetic circuits. A5. Differentiation between dc and ac circuits. A6. Learning how to implement the theorems in 3 phase circuits.
B. Subject-specific skills B1.Solving dc and ac circuits B2.Referring to mathematics to solve electrical circuits. B3.simulating electrical circuits to magnetic circuits.
Teaching and Learning Methods
Theory lecture, the laboratory, Summer training.
Assessment methods
Quizzes, semester tests, Final tests, practical test.
C. Thinking Skills C1.Planting creativity spirit to find out solutions for problems. C2.developping the capability of team work. C3.Developing the sensation of holding the burdens. C4. Encouraging the values of industriousness.
Teaching and Learning Methods
Academic lectures, practical labs, workshops, training in related work fields.
Assessment methods
Reactive assessment, semester tests, final tests.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1.Transforming the electrical circuit into a mathematical model

D2.Calculations of electrical loads.

D3.analogy of electrical circuits with magnetic circuits.

D4.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st	6	Units	Symbols and Abbreviations	lecture	Quizzes
2nd	6	Direct current	Kirchhoff's law	Lecture, lab	Tests and quizzes
3rd	6	Circuits	Series,parallel,open and short	Lecture ,lab	Practical , written
4th	6	Conversion	Delta to star and vise versa	Lecture , lab	Practical , written
5th	6	Method	Nodal voltage	Lecture ,lab	Written ,practical
6th	6	Method	Loop Mesh current	Lecture ,lab	Practical written
7th	6	Method	Superposition	Lecture ,lab	Practical written
8th	6	Theorem	Thevenins	Lecture ,lab	Tests and quizzes
9th	6	Theorem	Norton's	Lecture ,lab	Written ,practical
10th	6	Theorem	Maximum power	Lecture ,lab	Tests and quizzes
11th	6	Theorem	Reciprocity	Lecture ,lab	Practical written
12th	6	Alternating current	Types of Alternating,Generatoion	Lecture ,lab	Practical written
13th	6	A.C	Current and voltage	Lecture ,lab	Tests and quizzes
14th	6	A.C	Effective value Current and voltage	Lecture	Practical written
15th	6	Phasor A.C	Circuit elements	Lecture	Practical written
16th	6	Vector	The vector diagram	Lecture	Tests and quizzes
17th	6	Reviews	Complex numbers	Lecture	Practical written
18th	6	A.C	Series and parallel	Lecture ,lab	Practical written
19th	6	A.C	Power and mean power	Lecture	Practical written
20th	6	A,C circuit	Kirchhoff's law	Lecture ,lab	Practical written
21th	6	A,C circuit	Loop method	Lecture	Practical written
22th	6	A,C circuit	Superposition method	Lecture ,lab	Practical written
23th	6	A,C circuit	Thevenins	Lecture ,lab	Tests and quizzes

24th	6	A,C	Norton's	Lecture ,lab	Practical written
25th	6	A,C circuit	3 phase current	Lecture ,lab	Practical written
26th	6	A,C circuit	Solving 3 phase current	Lecture	Practical written
27th	6	magneti c	The magnetic field	Lecture ,lab	Practical written
28th	6	magneti c	Solving The magnetic field	Lecture	Practical written
29th	6	Transfor mers	Transformers	Lecture ,lab	Practical written
30th	6	machine s	Direct current machine and generators	Lecture ,lab	Practical written

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Electrical Technology by Theraja
Special requirements (include for example workshops, periodicals, IT software, websites)	IEEE transactions on Instrumentation and Measurements
Community-based facilities (include for example, guest Lectures , internship , field studies)	None

13. Admissions	
Pre-requisites	
Minimum number of students	25
Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Engineering drawing
4. Programme(s) to which it contributes	Computer Electronics
5. Modes of Attendance offered	Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	90 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the fourth stage of computer electronics branch and prepare them to be able to: 1. Understand the basic rules for drawing geometric using computer 2. Draw a basic models using this program. 3. Design and drawing models proposed	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1. Knowledge and understanding of the fundamentals of engineering drawing using AutoCAD program

A2 Drawing know basic geometric shapes using computer

A3. Knowledge and understanding of the program commands

A4 Knowledge of drawing 2D dimensional shapes

A5 Knowledge of drawing 3D dimensional shapes

A5 knowledge of writting and put dimmension in dr

B. Subject-specific skills

B1 drawing the 2d dimension

B2. Drawing the 3d dimension

B3 Implementation of orders for engineering drawing

B4 Put-dimensional drawing and writing on the drawing

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students knowledge

Laboratory and practical workshops: that provide everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process

Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students

Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills

Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills

C. Thinking Skills

C1. Planting the spirit of creativity and innovation among students

C2. develop a sense of responsibility for students

C3. Development diligence and perseverance to get the job done to reach satisfactory results values

C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it

Practical projects is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Clarify the importance of the program in the academic and practical field

D2. Expand the perceptions of students to accommodate for the analysis of engineering drawings

D3. Hiring program for AutoCAD drawing geometric shapes

D4. To find different ways to draw geometric shapes

11. Course Structure					
Week	Hours		Unit/Module or Topic Title	Teaching Method	Assessment Method
,1,2,3,4 ,5,6,7	21		Basics of AutoCAD software	, lab	• Interactive assessment • Editorial periodic test • Direct assessment
8,9,10, 11,12,1 3,14	21		Two-dimensional graphics	, lab	• Interactive assessment • Editorial periodic test • Direct assessment
15,16,1 7,18,19	15		Modify tools of 2d drawining	, lab	• Interactive assessment • Editorial periodic test Direct assessment
20,21,2 2,23	12		Dimensional geometry	, lab	• Interactive assessment • Editorial periodic test Direct assessment
24,25	6		Three-dimensional shapes	, lab	• Interactive assessment • Editorial periodic test Direct assessment
26,27,2 8	12		Three-dimension shapes (2d to 3d)	, lab	• Interactive assessment • Editorial periodic test Direct assessment
29,30	6		Application	, lab	
12. Infrastructure					

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	AutoCAD 2016 Tutorial First Level 2D Fundamentals Randy H. Shih
Special requirements (include for example workshops, periodicals, IT software, websites)	Learning **AutoCAD**® 2010, Volume 1 Autodesk Official Training Guide Essentials
Community-based facilities (include for example, guest Lectures , internship , field studies)	S. choudhury" project mangement", tata McGraw hill-2003

13. Admissions	
The introduction of some of some of the practical applications in other fields	

Sample course description

Course description

This description provides concise purely for the most important characteristics of the decision and expected student learning outcomes achieved demonstrating whether he had achieved a maximum advantage of available learning opportunities. And must be linked to the program description.

ducational institution	Technical College of electrical engineering
Scientific Center	Computer technology engineering
Name/symbol	Mathematics (1)
Attendance forms available	
Semester/year	2020\2021
The number of hours (total)	90.
Date description	8\6\2021

Objectives of the decision
See mathematical equations and laws
Understand and learn the practical applications of laws and the necessary math problems to solve simple and complex circuit
Understanding and knowledge of appropriate mathematical choice digital programming
Understand and learn the necessary math equations and applications of matrices.

the output of the decision and the methods of teaching, learning and assessment
A cognitive goals. 1. identify the equations and mathematical laws to solve simple and complex circuit 2. identify the matrices and how to use them in programming 3. identify the spaces and sizes account laws A 4-learn math equations for calculus and how to solve them
B-objectives Marathi for decision. B 1 – selecting formulae for needed to solve electrical circuits B 2 – preparation of arrays and Baghdad account and used in the programming. B 3 – calculating the volumes and spaces B 4.
Teaching and learning methods
Academic lectures that contribute to develop a strong foundation and solid foundation to support the student's cognitive fishing
Methods of evaluation
Interactive assessment which is done directly between the student and the Professor and one of the ways feedback upon which faculty members evaluate the teaching and learning process Periodical exams husband given how student scientific content and the extent of the interaction with the material given by the faculty. Quarterly tests and be the middle ring student interest and follow rule during the rest of the semester. Final examinations and final episode in the student assessment and the extent of its interaction and interest in scientific material during the entire academic year
C-value and affective objectives C 1-laying the creativity of students and eager to find innovative solutions to various problems C 2-developing students ' capability for collective action as effective teams graduated with outstanding results 3. develop a sense of responsibility among students and mental configuration of their burdens C 4-promoting values of prudence and perseverance to complete the work to reach satisfactory results.

Teaching and learning methods
Stimulating the creative side by asking different problems to students and motivate them to find appropriate solutions Work teams are evaluating the results of its work and change their structure regularly to develop a spirit of cooperation and development and motivating students to make unremitting efforts to work with the different circumstances
Methods of evaluation
Direct assessment is assessment by the staff directly and install their remarks about it. And his ability to aigadl solutions for various scientific problems
D-General and rehabilitative skills (other skills for employability and personal development). 1.-Select the necessary equations to solve electrical circuits B 2-matrices for use in programming D 3. D 4

11 . Course Structure .					
Assessment Method	Teaching Method	Unit/Module or Topic Title	ILOs	Hours	Week
Daily test	lecture	Matrices	Introduction to the Matrices	3	1
Daily test	Lecture	Determinants	Determine the Matrices value	3	2
Daily test	Lecture	Cramer s rule	Cramer s rule	3	3
Daily test	Lecture	Function and their graphs	Function and their graphs	6	5+4
Daily test	Lecture	Slopes and equation of lines	Slopes and equation of lines	3	6
Daily test	Lecture	Type of functions , trigonometric functions	Type of functions , trigonometric functions	3	7
Daily test	Lecture	Absolute value of magnitude	Absolute value of magnitude	3	8
Daily test	Lecture	Limits and continuity	Limits and continuity	3	9
Daily test	Lecture	Scalars, vectors, component of vector algebra, dot product	Scalars, vectors, component of vector algebra, dot product	3	10
Daily test	Lecture	Orthogonal vectors, component of vector algebra, vector calculus	Orthogonal vectors, component of vector algebra, vector calculus	3	11
Daily test	Lecture	Limit theory of derivative, chain rule	Limit theory of derivative, chain rule	3	12
Daily test	Lecture	Derivative of trigonometric ,inverse trigonometric , hyperbolic, inverse hyperbolic	Derivative of trigonometric ,inverse trigonometric , hyperbolic, inverse hyperbolic	3	13
Daily test	Lecture	Derivative of logarithmic, exponential	Derivative of logarithmic, exponential	3	14
Daily test	Lecture	Curve sketching by y_2 , y_3	Curve sketching by y_2 , y_3	3	15
Daily test	Lecture	Application of differentiation	Application of differentiation	3	16
Daily test	Lecture	Theory of integration (area	Theory of integration (area	3	17

		problem)	problem)		
Daily test	Lecture	Definite and indefinite integral, integral of trigonometric, integral of inverse trigonometric, integral of exponential , logarithmic	Definite and indefinite integral, integral of trigonometric, integral of inverse trigonometric, integral of exponential , logarithmic	6	19+18
Daily test	Lecture	Integration by parts	Integration by parts	**6**	21+ 20
Daily test	Lecture	Application of definite integrals	Application of definite integrals	**3**	22
Daily test	Lecture	Volumes	Volumes	6	24 + 23
Daily test	Lecture	Length of plan curve	Length of plan curve	3	25
Daily test	**Lecture**	**Approximation (trapezoidal rule)**	**Approximation (trapezoidal rule)**	**3**	**26**
Daily test	**lecture**	**Simpson rule**	**Simpson rule**	**3**	**27**
Daily test	**Lecture**	**Application of approximation**	**Application of approximation**	**6**	**29 + 28**
Daily test	**Lecture**	**Review all**	**Review all**	**3**	**30**

Infrastructure .	
Calculus Finney / Thomas (part 1)	**:Required reading -1** **CORE TEXTS •** **COURSE MATERIALS •** **OTHER •**
Calculus Finney / Thomas (part 1) Calculus with Analytic Geometry	Special requirements (include for example workshops, periodicals, IT software, (websites

13. Admissions
(include for example, guest
Lectures , internship , field studies)
Community-based facilities

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Communication Fundamentals
4. Program me (s) to which it contributes	Second
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	150 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
-Understanding what is the communication, the signal and the systems advantage and disadvantage of each type of signals and systems. - Viewing and knowledge block diagram communication system. - Understanding analyzing signals in Fourier series and Fourier transform. - Understanding what is the filters, types of filters and the design of filters. -Understanding the concepts of analogue modulation AM &FM) - Understanding the transmission in the communication and its application in the smith chart	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1- definition of concepts and terminology used in analogue communication.
A2- definition of advantage and disadvantage of each type of signals in communications.
A3- identification signal representation using Fourier series and Fourier transform
A4-Identify filters and its application in communication systems
A5- definition types of analogue modulation (AM& FM)
A6- definition the transmission line and its application of Smith chart

B. Subject-specific skills

B1-How to representation the signal from time domain to frequency domain.
B2-Design passive filters and active filters
a digital communication system
B3 – modulate analogue signal by AM & FM.
B3 - How to reduce the noise and interference on the analogue signal

Teaching and Learning Methods

- View lecture and charts
- smart board
- Scientific laboratories

Assessment methods

-Oral questions and information retrieval
-Weekly exams
-Quarterly tests
- Final exams

C. Thinking Skills

C1- student development on how to analyze the difficulties and overcome them
C 2-Develop a sense of responsibility
C 3-Development diligence and perseverance to get the job done to reach satisfactory results
C4- Implant the spirit of innovation among students

Teaching and Learning Methods

Ask a scientific problems and the demand from students to find more than a solution to it different scientific methods to stimulate the creative side of students
Assessment methods
-Direct assessment - Practical projects

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- work on analogue systems and find the most suitable designs.
D2- Comparison between analogue and digital signal analysis.
D3- Design any filters passive or active with different value of passive device and active device
D4- send and receive more than a signal at the same time to modulate it and how to retrieve it to demodulate by using analogue modulating

11. Course Structure					
Week	Hours	ILOs		Teaching Method	Assessment Method
1	2 lecture /2 lab	Understand what is signal and system	Introduction to signal and system	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
2	2 lecture /2 lab	Understand the types of signals	Signal classification,	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
3	2 lecture /2 lab	Understand the types system, communication system	System classification ,	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
4,5	2 lecture /2 lab	Understand the signal representation using Fourier Series	Fourier Series,	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
6	2 lecture /2 lab	Understand the signal spectrum	signal spectrum	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
7	2 lecture /2 lab	Understand the signal spectrum using Fourier	signal spectrum using Fourier transform	Lecture , lab	• Interactive assessment • Editorial

		transform			periodic test Direct assessment
8 , 9	2 lecture /2 lab	Understand the Properties of Fourier transform	Properties of Fourier transform	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
10, 11, 12	2 lecture /2 lab	Understand Filters and Filters classification	Filters, Filters classification Passive & Active	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
13, 14, 15	2 lecture /2 lab	Understand Amplitude modulation and type of AM	Amplitude modulation, type of AM,	Lecture , lab	
16, 17	2 lecture /2 lab	Understand the Frequency Division Multiplexing and types of Modulation and Demodulation , SSB VSB,	Frequency Division Multiplexing, SSB Modulation and Demodulation, VSB,	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
18, 19, 20, 21, 22	2 lecture /2 lab	Understand Frequency Modulation types FM and power calculation,	Frequency Modulation, type of FM, Narrow Bandwidth FM & Wide band FM, power calculation, SNR in FM,	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
23, 24	2 lecture /2 lab	Understand the noise in AM and FM	Noise in communication systems, noise in	Lecture , lab	• Interactive assessment • Editorial

		system	AM and FM systems		periodic test Direct assessment
25 , 26 , 27, 28 , 29, 30	2 lecture /2 lab	Understand the Transmission Line and Smith Chart	Transmission Line Smith Chart.	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	
Special requirements (include for example workshops, periodicals, IT software, websites)	1. Haykin S., Introduction to Analog and Digital Communications, second edition, 2007. 2. Principles of Communication Systems ,By .S.Chitode ,First Edition-2007 3.Modern Digital and Analog Communication Systems, By B.P.Lathi OXFORD 4.Analog and Digital Communications, By Schaum
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	New kit and lab.
Minimum number of students	30
Maximum number of students	40

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Department of Computer Engineering Techniques
3. Course title/code	Computer application
4. Programme(s) to which it contributes	Second stage
5. Modes of Attendance offered	
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The aim of this tutorial is to introduce the software MATLAB for numerical computations and in particular familiarizing student with the *Matlab*	
Training the student to the Basic commands through the *Command window* and output through the *Graph window*	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

1. perform basic mathematical operations on simple variables, vectors, matrices and complex numbers

2-generate 2-D plots

3- use and write script files (MATLAB programs). MATLAB script files have a file extension name .m and are, therefore, usually referred as M-files.

5 Use the 'help' and 'lookfor' commands to debug codes

B. Subject-specific skills

B1. B 1 - incoming and outgoing values are calculated from the circuit board that contains a diode or Turansistur

B 2 - How to design circuitry according to certain values

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Teaching and Learning Methods

Academic lectures that contribute to a strong and solid basis to support cognitive fishing student

Practical laboratory that provides practical experience for students through practical experiences, which in turn support and promote understand and grasp the theoretical side

Assessment methods

Interactive assessment carried out directly between the student and the professor, one of the feedback upon which faculty members in the evaluation of teaching and learning practical ways

Written tests periodic Toffermalomat all over the follow-up to the student for scientific content and the extent of interaction with the material given by teaching

Quarterly tests and be middle ring, which was held over the student's interest and follow-up of scientific material Bjanbhe theoretical and skills during a full semester

Final exams and is the final episode in the student assessment and the extent of interaction and interest in the subject area during the full academic year

C. Thinking Skills

C1 J1-implant the spirit of creativity and diligence of the students find them on innovative solutions to various problems

C 2-development ability of students to work together effectively as teams come out excellent result

C 3-develop a sense of responsibility among students and psychological configuration to carry the burden on their shoulders

J4- development to ensure the values and perseverance to get the job done to reach satisfactory results

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Teaching and Learning Methods

Stimulate creative side by asking different problems in front of the students and urged them to find appropriate solutions

Form working groups are evaluating the results of its work and change their structure on a regular basis for the development of the spirit of cooperation, development and motivate students to do the tireless work of the various efforts Balzrov

Assessment methods

Direct assessment where they are evaluated by the teaching directly and install their feedback about it
Operation projects and graduation projects are neighborhood to assess the student's ability to creativity and achievement, teamwork and ability to Aejadl various scientific solutions to problems

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. he expense of entering and leaving the values of the circuit board that contains a diode or Turansistur
B 2 - How to design circuitry according to certain values
D 2.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st	3	Introduction ,Mat lab environment , Mat lab windows	Introduction Mat lab	Lecture + lab	An oral test
2th, 3th	6	A first program, Expression, Constants	A first program	Lecture + lab	Oral test
4th	3	Variables and assignment statement	Variables	Lecture + lab	Oral test
5th	3	Arrays, Built in functions, basic matrix		Lecture + lab	Oral test
6th ,7th	6	Multiple data sets in one graph	Basic Plotting	Lecture + lab	Oral test
8th, 9th, 10th	9	Conditional statement	Control statement	Lecture + lab	Oral test
11th, 12th, 13th	9	While, for statement	repetition	Lecture + lab	A written examination
14th	3	String handling	String handling	Lecture + lab	Written test
15th	3	Procedures and function	function	Lecture + lab	Written test
16th	3	cells	cells	Lecture and lab	Written test
17th	3	Length, size, reshape, dot	Printing output	Lecture	Final test
18th, 19th, 20th	9	Handle graphics and user interface	GUI	Lecture + lab	Oral test
21th	3	Getting input, setting output	GUI interface	Lecture + lab	Oral test
22th, 23th	6	Predefined GUI	GUI	Lecture + lab	Oral test
24th, 25th,	6	Menu-driven programs	Menu-driven programs	Lecture + lab	Oral test
26th, 27th	6	Writing and reading to & from text file	Manipulating text	Lecture + lab	Oral test
28th, 29th, 30th	9	Introduction to image analysis	Image	Lecture + lab	Oral test

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	*Middle Technical University*
2. University Department/Centre	*Electrical Engineering Technical College \ Computer Engineering Technique*
3. Course title/code	Computer Programming 2
4. Programme(s) to which it contributes	2020\2021
5. Modes of Attendance offered	Lecture \ laboratory
6. Semester/Year	Year
7. Number of hours tuition (total)	150
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. knowledge variables , data types, and basic input/output	
2. knowledge making decisions	
3. knowledge the looping	
4. knowledge functions	
5. know and understand the arrays	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

1. knowledge variables , data types, and basic input/output
2. knowledge making decisions
3. knowledge the looping
4. knowledge functions
5. know and understand the arrays

B. Subject-specific skills

1. Implement the statement and the functions.
2. write the programs using C++
3. Design related programs in the field of competence

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which the development of the students knowledge

Laboratory and practical workshops: that provide everything he needs from the student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to persons and property

Systematic training: systematic training aims to provide the experience the student and the labor market to enable the student to understand the practical application of curricula he studied.

Assessment methods

Interactive Rating: Rating process where the ditch directly between the student and teaching and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process.

Periodic tests editorial: The availability of these tests the knowledge of a faculty member for over a follow-up to the students to content academy and how to interact with information and observations given by teaching students.

Quarterly exam: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester, both academic and skill

The final exam: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year, both academic and skill.

C. Thinking Skills

C1. Planting the spirit of creativity among students and to ensure that find them innovative solutions to various problems

C2. Students develop the ability to work together effectively as teams graduated distinct results.

C3. Sense of responsibility among students and psychological configuration to carry the burden on their shoulders development.

C4. Development to ensure the values and perseverance to get the job

Teaching and Learning Methods
Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate creative side of the students. Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and stimulate students to instead of all the efforts the crisis of the work of the various conditions and with several people.
Assessment methods
Direct assessment: Where is this Rating by faculty members directly and through observation of the interaction of students and their application of section sentimental ad valorem targets and record their observations about it Operation projects and graduation projects: is assessing the student's ability to ACCT and to work in teams, consequences and solutions to various scientific problems facing students.

D. General and Transferable Skills (other skills relevant to employability and personal development)
1. Run all the C++ statements 2. Write and run the programs using C++ language 3. Design related programs in the field of competence

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd,	8	C++ Review Program structure, namespace, identifiers, variables, constants, operators, typecasting,	Algorithm and Flow Chart	lecture laboratory	Oral exam, paper exam , lab. Report
3rd	4	Introduction to Object-Oriented Programming in (C++.	Introduction to C++ (Structure of a program	lecture laboratory	Oral exam, paper exam , lab. Report
4, 5th, 6th, 7th, 8th+,	20	Objects and Classes (Basics of object and class in C++, Private and public members, static data and function members, constructors and their types, destructors and operator overloading)	Variables , Data Types, Declaration of variables, Scope of variables, Initialization of variables, Expressions and Basic Input/Output	lecture laboratory	Oral exam, paper exam , lab. Report
, 9th, 10th, 11th, 12th, 13th14th	24	Polymorphism (Pointers in C++, Pointes and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism)	Operators (Assignment, Arithmetic operators, Compound assignment, Increase and decrease, Relational and equality operators, Conditional operator, Bitwise Operators and Explicit type casting operator)	lecture laboratory	Oral exam, paper exam , lab. Report
15th, 16th17th, 18th, 19th	20	I/0 and File management (Concept of streams, cin and cout objects, C++	Making Decisions (if...else and switch)	lecture laboratory	Oral exam, paper exam , lab. Report

20th21st, 22nd, 23rd, 24th, 25th	24	stream classes, Unformatted and formatted *VO,* manipulators, File stream, C++ File stream classes, File management functions, File mode s, Binary and random files).	Looping (while loop and for loop)	lecture laboratory	Oral exam, paper exam , lab. Report
25th26th, 27th, 28th, 29th, 30th	24	Templates, Exceptions and STL (What is templ ate? function templates and class templates, Introduction to exception, try-catch-throw, multiple catch, catch all, rethrowing exception, implementin g user defined exceptions, Overview and use of Standard Template Library).	Jump statements (break, continue and goto)	lecture laboratory	Oral exam, paper exam , lab. Report

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1. How to Program C++ 2. Step by step with C++ 3. Pointers in C++
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	No special requisites
Minimum number of students	40
Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Department of Computer Engineering Techniques
3. Course title/code	electronics
4. Programme(s) to which it contributes	Second stage
5. Modes of Attendance offered	
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
Viewing the properties of electronic materials and how it is manufactured	
Understanding and knowledge of the practical applications of diode and Transistor	
Understanding and knowledge of the types of amplifiers Transistors and the principle of each one's work	
Understanding and knowledge of the electrical signal amplifiers and kinds	
Practical application and of amplifiers and the circuits used in	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

1. O1-identification signal emerging from the diode characteristics and practical applications where it is used curve
2-identify to the transistor principle of his work and the characteristics of the signal in and out of it and ways of linking the electronic circuit
3- types Turanestorat and the principle of the work of each one of these species
4-identify the frequency response for each type of Turanestor and how to employ it in circuit design
5- identify amplifiers signal types and applications used in addition to the frequency response of these amplifiers
6- identify the integrated circuit

B. Subject-specific skills

B1. B 1 - incoming and outgoing values are calculated from the circuit board that contains a diode or Turansistur
B 2 - How to design circuitry according to certain values

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Teaching and Learning Methods

Academic lectures that contribute to a strong and solid basis to support cognitive fishing student
Practical laboratory that provides practical experience for students through practical experiences, which in turn support and promote understand and grasp the theoretical side

Assessment methods

Interactive assessment carried out directly between the student and the professor, one of the feedback upon which faculty members in the evaluation of teaching and learning practical ways
Written tests periodic Toffermalomat all over the follow-up to the student for scientific content and the extent of interaction with the material given by teaching
Quarterly tests and be middle ring, which was held over the student's interest and follow-up of scientific material Bjanbhe theoretical and skills during a full semester

Final exams and is the final episode in the student assessment and the extent of interaction and interest in the subject area during the full academic year

C. Thinking Skills

C1 J1-implant the spirit of creativity and diligence of the students find them on innovative solutions to various problems
C 2-development ability of students to work together effectively as teams come out excellent result
C 3-develop a sense of responsibility among students and psychological configuration to carry the burden on their shoulders
J4- development to ensure the values and perseverance to get the job done to reach satisfactory results

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Teaching and Learning Methods

Stimulate creative side by asking different problems in front of the students and urged them to find appropriate solutions

Form working groups are evaluating the results of its work and change their structure on a regular basis for the development of the spirit of cooperation, development and motivate students to do the tireless work of the various efforts Balzrov

Assessment methods

Direct assessment where they are evaluated by the teaching directly and install their feedback about it
Operation projects and graduation projects are neighborhood to assess the student's ability to creativity and achievement, teamwork and ability to Aejadl various scientific solutions to problems

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. he expense of entering and leaving the values of the circuit board that contains a diode or Turansistur
B 2 - How to design circuitry according to certain values
D 2.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1+2	10	Introduction to the semiconductor material and diode characteristics	Semiconductor materials	Lecture + lab	An oral test
3+4	10	Diode application in DC	Diode applications	Lecture + lab	Oral test
5+6	10	Diode application in AC	Diode applications	Lecture + lab	Oral test
7	5	Zener diode characteristics and applications	Zener diode	Lecture + lab	Oral test
8+9+10	15	BJT transistor characteristic and configuration methods	BJT transistors	Lecture + lab	Oral test
11 +12 +13	15	BJT DC analysis	BJT DC analysis	Lecture + lab	Oral test
14+15+ 16+17	20	Transistor modeling and analysis of AC models used to resolve this circuit	Transistor modeling and analysis of AC circuits	Lecture + lab	A written examination
18+19+ 20+21	20	FET transistor characteristics and applications	FET transistor	Lecture + lab	Written test
23+22	10	Transistors frequency response	Frequency response	Lecture + lab	Written test
24+25+ 26+27	20	Amplifiers types and applications	Amplifiers types and applications	Lecture and lab	Written test
28+29+ 30	15	Integrated circuits	Integrated circuits	Lecture	Final test

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Electronic device and circuit theory

Special requirements (include for example workshops, periodicals, IT software, websites)	Electronic device and circuit theory
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	*Middle Technical University*
2. University Department/Centre	*Electrical Engineering Technical College \ Computer Engineering Technique*
3. Course title/code	Instrumentation & Measurements
4. Programme(s) to which it contributes	2020\2021
5. Modes of Attendance offered	Lecture \ laboratory
6. Semester/Year	Year
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. knowledge and measurement units for electrical engineering physical quantities	
2. knowledge of measurement devices for basic electrical transactions	
3. knowledge of the special electronic measurement devices	
4. knowledge and understanding of how to work oscilloscope and sensors of various physical quantities	
5. know and understand how the different devices generate electrical signal	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

1. knowledge and measurement units for electrical engineering physical quantities
2. knowledge of measurement devices for basic electrical transactions
3. special knowledge of electronic measurement devices
4. knowledge and understanding of how to work oscilloscope and sensors of various physical quantities
5. know and understand how the different devices generate electrical signal

B. Subject-specific skills

1. The use of measurement devices for basic electrical transactions
2. Use oscilscope device and sensors of various physical quantities
3. The use of multiple phases for generating electrical signal devices

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which the development of the students knowledge

Laboratory and practical workshops: that provide everything he needs from the student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to persons and property

Systematic training: systematic training aims to provide the experience the student and the labor market to enable the student to understand the practical application of curricula he studied.

Assessment methods

Interactive Rating: Rating process where the ditch directly between the student and teaching and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process.

Periodic tests editorial: The availability of these tests the knowledge of a faculty member for over a follow-up to the students to content academy and how to interact with information and observations given by teaching students.

Quarterly exam: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester, both academic and skill

The final exam: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year, both academic and skill.

C. Thinking Skills

C1. Planting the spirit of creativity among students and to ensure that find them innovative solutions to various problems

C2. Students develop the ability to work together effectively as teams graduated distinct results.

C3. Sense of responsibility among students and psychological configuration to carry the burden on their shoulders development.

C4. Development to ensure the values and perseverance to get the job

Teaching and Learning Methods
Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate creative side of the students. Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and stimulate students to instead of all the efforts the crisis of the work of the various conditions and with several people.
Assessment methods
Direct assessment: Where is this Rating by faculty members directly and through observation of the interaction of students and their application of section sentimental ad valorem targets and record their observations about it Operation projects and graduation projects: is assessing the student's ability to ACCT and to work in teams, consequences and solutions to various scientific problems facing students.

D. General and Transferable Skills (other skills relevant to employability and personal development)

1. The ability to use measurement devices for electrical engineering
2. The ability to deal with the waves of electrical and electronic analysis devices
3. The ability to deal with sensors for physical quantities and how to design
4. maintenance and design of electrical and electronic measurement devices

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd, 3rd, 4th	16	Introduction To Measurements Quantities And Instruments.	Introduction To Measurements Quantities And Instruments.	lecture laboratory	Oral exam, paper exam , lab. Report
5th, 6th, 7th, 8th	16	Electromechanical Indicating Instruments	Electromechanical Indicating Instruments	lecture laboratory	Oral exam, paper exam , lab. Report
9th, 10th, 11th, 12th	16	Bridges And Their Applications.	Bridges And Their Applications.	lecture laboratory	Oral exam, paper exam , lab. Report
13th, 14th, 15th, 16th	16	Oscilloscopes	Oscilloscopes	lecture laboratory	Oral exam, paper exam , lab. Report
17th, 18th, 19th, 20th	16	Signal Generation.	Signal Generation.	lecture laboratory	Oral exam, paper exam , lab. Report
23rd, 24th, 25th 21, 22	12	Primary Sensing Elements.	Primary Sensing Elements.	lecture laboratory	Oral exam, paper exam , lab. Report
26th, 27th, 28th	12	Analogue And Digital Data Acquisition System.	Analogue And Digital Data Acquisition System.	lecture laboratory	Oral exam, paper exam , lab. Report
29th, 30th	8	Computer – Controlled Test System.	Computer – Controlled Test System.	lecture laboratory	Oral exam, paper exam , lab. Report

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	**"Modern electronic instrumentation and measuring techniques",** Cooper D & A D Helfrick
Special requirements (include for example workshops, periodicals, IT software, websites)	1. **"Electronic Instrumentation",** H. S. Kalsi 2. **"Electronic Instrumentation and Measurements",** David A Bell
Community-based facilities (include for example, guest Lectures , internship , field studies)	**1- "Principles of measurement systems",** John P. Beately **2- Electronics & electrical measurements,** A K Sawhney, , Dhanpat Rai & sons http://www.academia.edu/.../A_K.Sawhney-A_course_in_Electrical_and_Electronic_Measu...%20Similar

13. Admissions	
Pre-requisites	No special requisites
Minimum number of students	40
Maximum number of students	30

Sample course description

Course description

This description provides concise purely for the most important characteristics of the decision and expected student learning outcomes achieved demonstrating whether he had achieved a maximum advantage of available learning opportunities. And must be linked to the program description.

ducational institution	Technical College of electrical engineering
Scientific Center	Computer technology engineering
Name/symbol	Mathematics (2)
Attendance forms available	
Semester/year	2020\2021
The number of hours (total)	90.
Date description	8\6\2021

Objectives of the decision
See mathematical equations and laws
Understand and learn the practical applications of laws and the necessary math problems to solve simple and complex circuit
Understanding and knowledge of appropriate mathematical choice digital programming
Understand and learn the necessary math equations and applications of matrices.

the output of the decision and the methods of teaching, learning and assessment
A cognitive goals. 1. identify the equations and mathematical laws to solve simple and complex circuit 2. identify the matrices and how to use them in programming 3. identify the spaces and sizes account laws A 4-learn math equations for calculus and how to solve them
B-objectives Marathi for decision. B 1 – selecting formulae for needed to solve electrical circuits B 2 – preparation of arrays and Baghdad account and used in the programming. B 3 – calculating the volumes and spaces B 4.
Teaching and learning methods
Academic lectures that contribute to develop a strong foundation and solid foundation to support the student's cognitive fishing
Methods of evaluation
Interactive assessment which is done directly between the student and the Professor and one of the ways feedback upon which faculty members evaluate the teaching and learning process Periodical exams husband given how student scientific content and the extent of the interaction with the material given by the faculty. Quarterly tests and be the middle ring student interest and follow rule during the rest of the semester. Final examinations and final episode in the student assessment and the extent of its interaction and interest in scientific material during the entire academic year
C-value and affective objectives C 1-laying the creativity of students and eager to find innovative solutions to various problems C 2-developing students ' capability for collective action as effective teams graduated with outstanding results 3. develop a sense of responsibility among students and mental configuration of their burdens C 4-promoting values of prudence and perseverance to complete the work to reach satisfactory results.

Teaching and learning methods
Stimulating the creative side by asking different problems to students and motivate them to find appropriate solutions Work teams are evaluating the results of its work and change their structure regularly to develop a spirit of cooperation and development and motivating students to make unremitting efforts to work with the different circumstances
Methods of evaluation
Direct assessment is assessment by the staff directly and install their remarks about it. And his ability to aigadl solutions for various scientific problems
D-General and rehabilitative skills (other skills for employability and personal development). 1.-Select the necessary equations to solve electrical circuits B 2-matrices for use in programming D 3. D 4

11 . Course Structure .					
Assessment Method	Teaching Method	Unit/Module or Topic Title	ILOs	Hours	Week
Daily test	lecture	Vector analysis	Vector analysis	3	1
Daily test	Lecture	Vector field	Vector field	3	2
Daily test	Lecture	Linear algebra	Linear algebra	3	3
Daily test	Lecture	Vector calculs	Vector calculs	3	4
Daily test	Lecture	Scalars and vector unit	Scalars and vector unit	3	5
Daily test	Lecture	Orthogonal vector	Orthogonal vector	3	6
Daily test	Lecture	Dot product	Dot product	3	7
Daily test	Lecture	cross product	cross product	3	8
Daily test	Lecture	Theory for vector field	Theory for vector field	3	9
Daily test	Lecture	Vector variable function	Vector variable function	3	10
Daily test	Lecture	Polar coordinates – gradient in polar	Polar coordinates – gradient in polar	3	11
Daily test	Lecture	Spherical coordinates	Spherical coordinates	3	12
Daily test	Lecture	Complex number	Complex number	3	13
Daily test	Lecture	Polar form of complex number	Algebra for complex number	3	14
Daily test	Lecture	Algebra for complex number	Algebra for Spherical coordinates	3	15
Daily test	Lecture	Algebra for Spherical coordinates	Infinite series	3	16
Daily test	Lecture	Infinite series	Infinite series	3	17
Daily test	Lecture	Power series	Power series	3	18
Daily test	Lecture	Convergence and divergence series	Convergence and divergence series	3	19
Daily test	Lecture	Number and	Number and	3	20

		Complex series	Complex series		
Daily test	Lecture	Complex variable	Complex variable	3	21
Daily test	**Lecture**	Cauchy – Riemann equations	Cauchy – Riemann equations	3	22
Daily test	**lecture**	Differential equation	Differential equation	3	23
Daily test	**Lecture**	Differential equation of the first order	Differential equation of the first order	3	24
Daily test	**Lecture**	Differential equation of n order	Differential equation of n order	3	25
Daily test	**Lecture**	Application	Application	3	26
Daily test	**Lecture**	Multiple integrations	Multiple integrations	3	27
Daily test	**Lecture**	Surface area	Surface area	3	28
Daily test	**Lecture**	Green theorem	Green theorem	3	29
Daily test	**Lecture**	Stokes theorem	Stokes theorem	3	30

Infrastructure .	
Calculus II	**:Required reading -1** **CORE TEXTS •** **COURSE MATERIALS •** **OTHER •**
Calculus Calculus with Analytic Geometry	Special requirements (include for example workshops, periodicals, IT software, (websites

13. Admissions
(include for example, guest
Lectures , internship , field studies)
Community-based facilities

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Computer Engineering Technicals / Telecommunications Networks Computer
3. Course title/code	Microprocessor architecture
4. Programme(s) to which it contributes	Second stage
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. Knowledge of major components and know the basic parts of the electronic calculator. 2. Knowledge of the main types of memory used in the calculator. 3. Knowledge of the CPU and components in the electronic calculator. 4. Possession of a scientific and practical skill of being able to diagnose faults and perform maintenance and repairs to the system calculator.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1-knowledge of the different computer electronics parts and different microprocessor.
A2- knowledge of memory classification
A3-knowledge of CPU component of 8085 microprocessor.
A4- -knowledge of CPU component of 8086 microprocessor.

B. Subject-specific skills

B - the ability to program processor 8085
B-2 - the ability to program processor 8086
B 3- - the ability to analyses different programs and conclude the outputs

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop cognitive balance for students
Practical laboratory:, which provides each student the expertise to help develop practical skills side and consolidate the principles necessary to carry out the projects correctly

Assessment methods

Interactive tests: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester for academic and skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year for academic and skills

C. Thinking Skills

C1- Implant the spirit of creativity among students and to ensure that find them innovative solutions to various problems
C2- Students develop the ability to work together effectively as teams come out excellent result
C3- Sense of responsibility among students and psychological configuration to carry the burden on their shoulders Development

C4- Development to ensure the values and perseverance to get the job done to reach satisfactory results

Teaching and Learning Methods

Stimulate the creative side of the students and that by asking various scientific problems and the demand of the students find appropriate scientific solutions to them in different ways
Develop a spirit of cooperation between the students, through the formation of working teams and motivate the students to exert all the necessary conditions for the work of the various efforts and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through note student interaction during the lecture and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams, consequences and solutions to various scientific problems

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- Analysis the data processing through the execution of the program
D2- acquire skill in the use of assembly language of 8085 microprocessor.
D3- acquire skill in the use of assembly language of 8086 microprocessor.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2	10	Lecture, laboratory	General architecture of digital computer, review of 8085 p	Identify the main parts of the computer	Questions oral, daily exam
3,4	10	Lecture, laboratory	8085 memory addressing	Knowledge of memory classification	Questions oral, daily exam
5,6	10	Lecture, laboratory	8085 1/0 addressing	Understanding methods of data representation within the computer	Questions oral, daily exam
7,7	10	Lecture, laboratory	8085 machine cycle & bus timing	Knowledge of MP execution steps	Questions oral, daily exam
9	5	Lecture, laboratory	8085 Interrupt Types	Identify the various interrupts types	Questions oral, daily exam
10	5	Lecture, laboratory	Introduction to 8085 MP instruction set	Understanding assembly programming for 8085 MP	Questions oral, daily exam
11,12	10	Lecture, laboratory	8086 Software Architecture, BIU, EU, registers, pipeline	Knowledge of 8086 MP architecture	Questions oral, daily exam
13	5	Lecture, laboratory	Memory segmentation, generating memory address	Understanding the memory types in 8086 MP	Questions oral, daily exam
14	5	Lecture, laboratory	Hardwareorganizatio8086 space,	Understanding the main parts of 8086 MP	Questions oral, daily exam
15,16	10	Lecture, laboratory	Pin configuration, min &max mode,8288 bus controller, 8284 system clock	Understanding the main component of 8086 system	Questions oral, daily exam
17,18	10	Lecture, laboratory	Addressing mode, machine language coding	Understanding of different programs for 8086 MP	Questions oral, daily exam
19,20, 21,22, 23	25		8086 instructions set (Data transfer	Understanding assembly programming for 8086 MP	Questions oral, daily exam
24	5		LOOP instructions		Questions oral, daily exam
25	5		Stack memory, POP & PUSH instructions	Understanding how to store and retrieve data in the stack	Questions oral, daily exam
26,27	10		Memory read & write Bus Cycles, Idle & wait state	Understanding the buses behavior with 8086 MP	Questions oral, daily exam
28,29	10		Memory Interface Circuits, bus transceivers, Bank Write and Bank Read	Understanding how to connect memory with 8086 MP	Questions oral, daily exam
30	5		I/O interface	Understanding how to connect input	Questions oral, daily exam

				and output devices with 8086 MP	

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1- Digital Fundamental by Floyed 2-Ramesh S. Goankar, “Microprocessor Architecture, Programming and Applications with 8085”, 5thEdition, Prentice Hall
Special requirements (include for example workshops, periodicals, IT software, websites)	1- Digital Fundamental by Floyed 2-Ramesh S. Goankar, “Microprocessor Architecture, Programming and Applications with 8085”, 5thEdition, Prentice Hall
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	Introducing some communication applications and some practical applications in other fields
Minimum number of students	30 students
Maximum number of students	60 students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Computer Engineering Technicals / Telecommunications Networks Computer
3. Course title/code	Computer Networks Fundamentals
4. Programme(s) to which it contributes	Third class of Telecommunications Networks Computer
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. Know the types of computer networks	
2. Know the types of devices of Computer Networks	
3. Learn methods of linking computer networks	
4. Know how to relay information through computer networks	
5. Know the types of protocols and programs that is appropriate for computer networks depending on the desired application.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1- The student gains experience in the field of computer networks
A2- Keep pace with developments in the field of computer curriculum
A3- Strengthen the link between the department and the various segments of society .

B. Subject-specific skills
B-1 - Preparation of technical engineers with high skills in the field of computer networks
B 2 - Work to enhance performance standards including the application of international standards in the field of computer engineering techniques .

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop cognitive balance for students
Practical laboratory:, which provides each student the expertise to help develop practical skills side and consolidate the principles necessary to carry out the projects correctly

Assessment methods

Interactive tests: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester for academic and skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year for academic and skills

C. Thinking Skills
C1- Implant the spirit of creativity among students and to ensure that find them innovative solutions to various problems
C2- Students develop the ability to work together effectively as teams come out excellent result
C3- Sense of responsibility among students and psychological configuration to

carry the burden on their shoulders Development
C4- Development to ensure the values and perseverance to get the job done to reach satisfactory results

Teaching and Learning Methods

Stimulate the creative side of the students and that by asking various scientific problems and the demand of the students find appropriate scientific solutions to them in different ways
Develop a spirit of cooperation between the students, through the formation of working teams and motivate the students to exert all the necessary conditions for the work of the various efforts and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through note student interaction during the lecture and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams, consequences and solutions to various scientific problems

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1- Connect the types of computer networks
D2- Has the ability to bind to all programming and computer networking devices
D3- Maintenance feeler networks.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st , 2nd	8	Lecture, laboratory	Introduction, and classify the computer networks according to application, size, transmission technology.	Knowledge of types of networks based on size and transport Technology	Questions oral, daily exam
3rd	4	Lecture, laboratory	LANs: Topologies, CSMA/CD, Token Access protocols, and IP addressing	Learn the most important species in the local area networks	Questions oral, daily exam
4th	4	Lecture, laboratory	Connection-Oriented Versus Connectionless Service, and Service Primitives	Understanding the difference between the services that rely on communication, that does not rely on contact	Questions oral, daily exam
5th, 6th	8	Lecture, laboratory	The ISO reference Model, and TCP/IP Reference Model.	Understanding of the OSI model	Questions oral, daily exam
7th	4	Lecture, laboratory	Metropolitan Area Networks, Wide Area Networks, Internetworks, and VPNs	Knowledge of types of large networks and small and private	Questions oral, daily exam
8th	4	Lecture, laboratory	Digital signal (size of : text files, image files, voice files, and videos files)	Knowing the size of the files by type	Questions oral, daily exam
9th	4	Lecture, laboratory	Bandwidth-Limited Signals, The Maximum Data Rate of a Channel	Knowing the bandwidth and speed of transmission of information	Questions oral, daily exam
10th	4	Lecture, laboratory	guided transmission media, and wireless transmission	Knowledge of types of center-carrier	Questions oral, daily exam
11th	4	Lecture, laboratory	Communication satellites: Geostationary, Medium-Earth Orbit, and Low-Earth Orbit Satellites	Knowledge of types of satellites	Questions oral, daily exam
12th ,13th	8	Lecture, laboratory	Digital modulation and multiplexing: Baseband, Pass band, FDM,TDM, and	Knowledge of types of signal conditioning	Questions oral, daily exam

			CDM		
14th , 15th, 16th	12	Lecture, laboratory	public switched telephone network: Structure of the Telephone System, DSL, and Trunks and Multiplexing, and Switching(Circuit switching & packet swishing)	Knowledge of types of data switches and hubs	Questions oral, daily exam
17th	4	Lecture, laboratory	cable television:	Knowledge of CATV components	Questions oral, daily exam
18th, 19th ,20th	12	Lecture, laboratory	DATA LINK LAYER DESIGN ISSUES: Framing, Error Control, and Flow Control	Knowledge of the duties of the data link layer	Questions oral, daily exam
21st , 22 th	8	Lecture, laboratory	ELEMENTARY DATA LINK PROTOCOLS	Albertkulat knowledge of working in the data link layer	Questions oral, daily exam
23th, 24 th	8	Lecture, laboratory	SLIDING WINDOW PROTOCOLS	Know the actual data is broken when you transfer data from the calculator to the center bus	Questions oral, daily exam
25th	4	Lecture, laboratory	Network Layer (Store-and-Forward Packet Switching)	Knowledge of the duties of network layer and how to do direct data	Questions oral, daily exam
26th	4	Lecture, laboratory	Network layer(Implementation of Connectionless Service)	Knowledge of services carried out without connection in the network layer	Questions oral, daily exam
27th ,28th	8	Lecture, laboratory	Network layer (Implementation of Connection-Oriented Service)	Knowledge of services that implement based on connection-oriented in the network layer	Questions oral, daily exam
29th	4	Lecture, laboratory	Network layer(Routing Algorithms)	See guidance in the network layer algorithms	Questions oral, daily exam
30th	4	Lecture, laboratory	Network layer(Broadcast Routing)	Knowledge of the routing algorithms in all directions in the network layer	Questions oral, daily exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Data Communications and Networking by McGraw-Hill Forouzan Networking Series

Special requirements (include for example workshops, periodicals, IT software, websites)	Data Communications and Networking by McGraw-Hill Forouzan Networking Series
Community-based facilities (include for example, guest Lectures , internship , field studies)	COMPUTER NETWORKING by James F. Kurose University of Massachusetts, Amherst

13. Admissions	
Pre-requisites	Introducing some communication applications and some practical applications in other fields
Minimum number of students	30 students
Maximum number of students	60 students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Computer Engineering Technical / network simulation
3. Course title/code	Computer Networks simulation
4. Programme(s) to which it contributes	Third class of Telecommunications Networks Computer
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. Know the types of computer networks	
2. Know the types of devices of Computer Networks	
3. Learn methods of linking computer networks and simulators packet tarcer	
4. Know how to relay information through computer networks	
5. Know the types of protocols and programs that is appropriate for computer networks depending on the desired application.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1- The student gains experience in the field of computer networks
A2- Keep in touch with development of network design
A3- cisco program .

B. Subject-specific skills
B-1 - Preparation of technical engineers with high skills in the field of computer networks
B 2 - Work to enhance performance standards including the application of international standards in the field of computer engineering techniques .

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop cognitive balance for students
Practical laboratory:, which provides each student the expertise to help develop practical skills side and consolidate the principles necessary to carry out the projects correctly

Assessment methods

Interactive tests: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester for academic and skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year for academic and skills

C. Thinking Skills
C1- Implant the spirit of creativity among students and to ensure that find them innovative solutions to various problems
C2- Students develop the ability to work together effectively as teams come out excellent result
C3- Sense of responsibility among students and psychological configuration to

carry the burden on their shoulders Development
C4- Development to ensure the values and perseverance to get the job done to reach satisfactory results

Teaching and Learning Methods

Stimulate the creative side of the students and that by asking various scientific problems and the demand of the students find appropriate scientific solutions to them in different ways
Develop a spirit of cooperation between the students, through the formation of working teams and motivate the students to exert all the necessary conditions for the work of the various efforts and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through note student interaction during the lecture and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams, consequences and solutions to various scientific problems

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1- Connect the types of computer networks
D2- Has the ability to bind to all programming and computer networking devices
D3- Maintenance feeler networks.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st . 2n 33d	8	Lecture, laboratory	(Simulation Overview), the three models (network model, node model, and process model).	Knowledge of types of networks based on size and transport Technology	Questions oral, daily exam
3r 4.5.6.7.d	4	Lecture, laboratory	Scenario 1: Network Implementation Scenario 2: Low level design Scenario 3: MPSL technology Scenario 4: Prediction and validation of network	Learn the most important species in the local area networks	Questions oral, daily exam
8.9th	4	Lecture, laboratory	SETUP(Simple Network, Busy network, One-server network, and Faster network)	Understanding the difference between the services that rely on communication, that does not rely on contact	Questions oral, daily exam
10.11 th	8	Lecture, laboratory	SETUP Wireless Network .	Understanding of the OSI model	Questions oral, daily exam
12	4	Lecture, laboratory	Using routing protocols	Knowledge of types of large networks and small and private	Questions oral, daily exam
13.14.15	4	Lecture, laboratory	ANALYSIS (Response Time of Simple Network vs. Busy network)	Knowing the size of the files by type	Questions oral, daily exam
16.17.18.19.20	4	Lecture, laboratory	CPU utilization of various servers in the Busy network	Knowing the bandwidth and speed of transmission of information	Questions oral, daily exam
21.22.23 4.25.26	4	Lecture, laboratory	Different types of examples	Knowledge of types of center-carrier	Questions oral, daily exam
27.28.29.30	4	Lecture, laboratory	Other types of computers network simulator	Knowledge of types of satellites	Questions oral, daily exam

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Data Communications and Networking by McGraw-Hill Forouzan Networking Series
Special requirements (include for example workshops, periodicals, IT software, websites)	Data Communications and Networking by McGraw-Hill Forouzan Networking Series
Community-based facilities (include for example, guest Lectures , internship , field studies)	COMPUTER NETWORKING by James F. Kurose University of Massachusetts, Amherst

13. Admissions	
Pre-requisites	Introducing some communication applications and some practical applications in other fields
Minimum number of students	30 students
Maximum number of students	60 students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	control engineering Fundamentals / CTETE33
4. Programme(s) to which it contributes	Computer Electronics & computer networks
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the third stage of two branches with information and prepare them to be able to: 1. system analysis in the time domain by using differential equations in the Laplace transform 2. System analysis in the frequency domain 3 working on the design of controllers designed using control theory which is PID 4. study and analysis of different systems for different entries response 5. study and analysis of the system stability	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1. knowledge and understanding of system analysis in the time domain by using differential equations in the lumpy field using Laplace transform

A2.knowledge and understanding of system analysis in the frequency domain in the lumpy field

A3. study and analysis of different systems for different entries response

A4. knowledge and understanding of the stability of different systems

A5. knowledge and understanding the work of controllers designed using control theory

B. Subject-specific skills

B1. Design controllers using PID control theory

B 2. write and execute algorithms to know systems stability

B 3. design and run controllers circuits using emulator environment

B4.calculating stability of the various systems

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students knowledge

Laboratory and practical workshops: that provide everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process

Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students

Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills

Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills

C. Thinking Skills

C1. Planting the spirit of creativity and innovation among students

C2. develop a sense of responsibility for students

C3. Development diligence and perseverance to get the job done to reach satisfactory results values

C4. scalability students to develop teamwork

Teaching and Learning Methods
Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people
Assessment methods
Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it Practical projects is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1 design controller of type PID operations D2-controlling different system and make sure they reach the stable satet and stay satble D3-finding systems response for different types of inputs and study stability

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
2,1	2 lecture /2 lab		Open and closed loop system	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
5,4,3	2 lecture /2 lab		Transfer function and Mathematical modelling of control systems	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
7,6	2 lecture /2 lab		DC servo motor transfer function	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
8	2 lecture /2 lab		Block diagram representation	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
11,10,9 12,	2 lecture /2 lab		Time domain analysis of control system: • Steady state analysis • Transient response analysis • Analysis of 1st order system • Analysis of 2nd order system	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
14,13	2 lecture /2 lab		P-I-D controllers	Lecture , lab	• Interactive assessment • Editorial periodic test

					Direct assessment
16,15	2 lecture /2 lab		Routh's criterion and applications of Routh's criterion	Lecture , lab	
,18,17 ,20,19	2 lecture /2 lab		Root Locus	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
,22,21 24,23	2 lecture /2 lab		Bode plot	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
,26,25 28,27	2 lecture /2 lab		Compensation	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
30,29	2 lecture /2 lab		Different examples	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Modern Control Engineering by Ogata
Special requirements (include for example workshops, periodicals, IT software, websites)	Control Systems by Bakshi Modern Control Systems by Dorf Control Systems Engineering by Nise
Community-based facilities (include for example, guest Lectures , internship , field studies)	Control Systems by Bakshi

13. Admissions	
Pre-requisites	Laptop for each student

Minimum number of students	30
Maximum number of students	40

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Digital communication
4. Programme(s) to which it contributes	Computer Electronics & computer networks
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The aims to students in third stage to defined and understand the -Concepts and terminology used in digital communications -The advantage and disadvantage of each type of digital communication systems -Types of Digital modulation - Send multiple digital signals at the same time and how to retrieve it	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1- definition of concepts and terminology used in digital communications
A2- definition of advantage and disadvantage of each type of digital communications systems
A3- definition types of digital modulation
A4-comparison between the types of digital systems and its advantages

B. Subject-specific skills

B 1 -Design a digital communication system
B 2 – modulate a digital signal
B 3 - How to reduce the noise and interference on the digital signal

Teaching and Learning Methods

- View lecture and charts
- smart board
- Scientific laboratories

Assessment methods

-Oral questions and information retrieval
-Weekly exams
-Quarterly tests
- Final exams

C. Thinking Skills

C1- student development on how to analyze the difficulties and overcome them
C 2-develop a sense of responsibility
C 3-Development diligence and perseverance to get the job done to reach satisfactory results
C4- implant the spirit of innovation among students

Teaching and Learning Methods

Ask a scientific problems and the demand from students to find more than a solution to it different scientific methods to stimulate the creative side of students

Assessment methods

-Direct assessment
- Practical projects

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- work on digital systems and find the most suitable designs
D2- digital signal analysis
D3- send more than a signal at the same time and how to retrieve it

11. Course Structure					
Week	Hours	ILOs		Teaching Method	Assessment Method
1	2 lecture /2 lab	Understand what is a digital system	Introduction to digital communication	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
2	2 lecture /2 lab	Understand the types of signals digital system design	Signal types, General block diagram of digital communication	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
3	2 lecture /2 lab	Identify the advantages and disadvantages of digital modulation	Advantage and disadvantage of digital modulation, digital coding	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
4,5	2 lecture /2 lab	Understand the types of modulation PAM, TDM	Sampling theorem, Pulse Amplitude Modulation (PAM), Time Division Multiplexing (TDM)	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
6	2 lecture /2 lab	Understand the types of modulation PWM, PPM	Pulse width and Pulse Position Modulation (PWM & PPM),	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment

7	2 lecture /2 lab	Noise measurement& S/N ratio	S/N in analog pulse modulation	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
8 , 9	2 lecture /2 lab	Understand the types of modulation PCM DPCM	Pulse Code Modulation PCM), Noise Consideration in PCM, Limitation and Modifications of PCM, Differential PCM (DPCM).	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
10 ,11	2 lecture /2 lab	Understanding encapsulation type DM	Delta Modulation (DM), Delta-Segma Modulation,	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
12, 13, 14	2 lecture /2 lab	Find the possibility of interference between waves and configure filters	Intersymbole Interference (ISI), Pulse Shaping to reduce ISI, Equalizer, Adaptive Equalizer, Matched Filter.	Lecture , lab	
15, 16, 17, 18, 19 ,20	2 lecture /2 lab	Understand the types of modulation ASK, FSK, PSK	Baseband modulation (Digital Modulation), Amplitude Shift Keying (ASK) [Modulation and demodulation]. Frequency Shift Keying (FSK) [Modulation and demodulation], Phase Shift Keying (PSK) [Modulation, Coherent and Noncoherent Detection], Differential PSK.	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
21, 22	2 lecture /2 lab	Analysis of the mistakes of the binary system	Error performance of Binary System.	Lecture , lab	• Interactive assessment • Editorial periodic test Direct

					assessment
23, 24	2 lecture /2 lab	Understand the types of modulation QPSK, OQPSK K	Quadrature Phase Shift Keying (QPSK), Offset QPSK, Minimum Shift Keying	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
25 , 26 , 27 ,28 , 29 30	2 lecture /2 lab	Understand the types of modulation QAM, MPS	Quadrature Amplitude Modulation (QAM), Multilevel Modulation Techniques M-ary PSK, M-ary QAM, Bandwidth Efficiency and power Spectra of modulated Signal, Carrier Recovery and Clock Recovery.	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Sarkar N., Elements of Digital Communications, first edition, 2003
Special requirements (include for example workshops, periodicals, IT software, websites)	- Haykin S., Introduction to Analog and Digital Communications, second edition, 2007.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	New kit and lab.
Minimum number of students	30
Maximum number of students	40

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Digital Controller
4. Program (s) to which it contributes	Types of recent Microcontrollers
5. Modes of Attendance offered	Lecture , Lab
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the 3th stage of the two branches with information and prepare them to be able to: 1. Known the types of Microcontroller and its architecture. 2. The difference between the microcontroller and microprocessor. 3 dealing with the internal parts of Microcontroller. 4. Programming the PIC Microcontrollers 5. Connect the Microcontrollers with peripherals to input and output the information. 6. Know the PLC controller with its internal architecture. 7. Programming the PLC with the Peripherals devices.	

8. Connecting the Microcontrollers with other Microcontrollers through many interfaces.

10· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding

A1. Programming the PIC Microcontroller using Micro C.
A2. Activating the internal ports for Input/ Output with peripherals devices
A3. Connecting the PIC with Peripheral devices such Sensors / Actuators and using ADC for signal converting.
A4. Using the serial connection for Information transfer.
A5. Using the Interrupt program within the programming.
A6. Using the Timers and delays within the program to achieve suitable program.

B. Subject-specific skills

B1. Reading the Analog and digital data.
B2. Connecting sensors and actuators.
B3. Design systems to make a decisions and storing the information in special memory.
B4. Connecting two or more PIC Microcontrollers using Serial connections.

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students' knowledge
Laboratory and practical workshops: that provides everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process.
Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students.
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills.

C. Thinking Skills

C1. Planting the spirit of creativity and innovation among students
C2. develop a sense of responsibility for students
C3. Development diligence and perseverance to get the job done to reach satisfactory results values
C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students.
Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people.

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it.
A practical project is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1.writing programs easily using Micro C pro
D2. Programming different PIC Microcontrollers with different external devices.
D3. Design a control and Sensing system using PIC Microcontrollers.
D4. Easily programming and modification the program to access a suitable program.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2 lecture /2 lab		Introduction to Microcontroller, Types of Microcontroller, difference between MP and Microcontroller.	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
2,3, 4,5	2 lecture /2 lab		Architecture of PIC Microcontroller • General Organization of PIC Microcontroller • Registers & Special function registers (SFR reg.) • Memory units and CPU unit • I/O ports • Serial communication • Baud rate • UART • Oscillator Timer /Counters	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
6,7	2 lecture /2 lab		Programming the Microcontroller • Outputting data/signals • Reading data/Signals • Character LCD Graphic LCD	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
8,9	2 lecture /2 lab		• A/D converter & Analog Module • On chip CCP (Capture, Compare & PWM)	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment

			• Microcontroller Interrupts Programming EEPROM Programming		
10,11	2 lecture /2 lab		- Principle of PLC	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
12,13	2 lecture /2 lab		- Application projects of Microcontroller.	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
13,14	2 lecture /2 lab		Input – Output modules of PLC	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
15,16	2 lecture /2 lab		Numbers systems and codes	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
17,18	2 lecture /2 lab		Fundamentals of logic in PLC	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
19,20	2 lecture /2 lab		Basic of PLC programming	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
21,22	2 lecture /2 lab		PLC- wiring diagram and ladders logic program and sensors	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
23,24,25	2 lecture /2 lab		Timers Programming Counters Programming Math. Operations	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
26,27	2 lecture /2 lab		Sensors and Actuators for Industrial Applications.	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
28,29,30	2 lecture /2 lab		PLC projects	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	PIC Microcontroller from absolute Beginner By: M. Amer Iqbal Qureshi
Special requirements (include for example workshops, periodicals, IT software, websites)	Programmable Controller, theory and Implementation

Community-based facilities (include for example, guest Lectures , internship , field studies)	Automating Manufacturing Systems with PLCs

13. Admissions	
Pre-requisites	Laptop for each student & PIC KIT Trainer
Minimum number of students	20
Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Digital Signal Processing
4. Programme(s) to which it contributes	computer networks
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	

The course aims to provide students of the third stage of two branches with information and prepare them to be able to:

1. To teach students the concepts of discrete-time signals, including mathematical representations, properties, frequency content, and aliasing.
2. To teach students the concepts of linear time-invariant discrete-time systems, including representations, properties, convolution relationship, and analysis techniques based on Fourier and Z transforms.
3. To introduce the concepts of filter design.

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1. Determine (possibly aliased) digital frequency of a sampled sinusoidal signal.

Convert DT signals between different notation representations.

A2. Identify basic components of a DSP system (A/D, signal processor, D/A)

A3. Identify classes of DT systems:
determine whether a DT system is linear, time-invariant, causal, stable, dynamic

A4. Perform analytical convolution of two DT signals,
either in time domain or using Z-transforms, or using Fourier transforms.
Apply to determining response of LTI system to given input signal.

A5. Convert between the following six representations of linear time invariant discrete time systems represented by constant coefficient difference equations: block diagram, recursive input-output expression, pole-zero diagram, system function in factored or expanded form, impulse response, frequency response.

A6. Understand radix-2 derivation of FFT algorithm and its computational savings.

A7. Identify basic tradeoffs in digital filter design.

B. Subject-specific skills

B1. Determine spectrum of sampled signal from spectrum of analog signal, given T, and identified aliased frequency components if any.

B2. Understand origins of Nyquist sampling rate and sinc reconstruction formula for bandlimited signals.

B3. Design FIR filters using window method or equiripple method.

B 4. Design IIR filters by bilinear transformation of analog filters, understanding

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students knowledge

Laboratory and practical workshops: that provides everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process
Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills

C. Thinking Skills
C1. Planting the spirit of creativity and innovation among students
C2. develop a sense of responsibility for students
C3. Development diligence and perseverance to get the job done to reach satisfactory results values
C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students
Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1- The design and implementation of programs language C ++ in addition to the language of MATLAB
D2- Provide a laptop for each student instead of the disk top to prevent electric

problems
D3- using modern scientific references

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd , 3rd	2 lecture /2 lab		Introduction to digital signal processing : Basic elements of DSP, DSP vs. ASP, application of DSP, Continues time signals vs. discrete time signals	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
4th , 5th , 6th	2 lecture /2 lab		Discrete time signals and sequences	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
7th , 8th , 9th	2 lecture /2 lab		Standard of discrete time signals (sequences): Unit sample sequence, Unit step sequence, Unit ramp sequence, Exponential sequence,	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
10th , 11th 12th	2 lecture /2 lab		(classification of discrete time signals)System properties: Static and dynamic system, shift invariant and shift variant system, Causal and non-causal system, linear and nonlinear system, stable and unstable system.	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
13th , 14th	2 lecture /2 lab		Convolution : Direct form method, graphical method, slide rule method	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
15th 16th ,	2 lecture		Correlation of discrete time	Lecture , lab	• Interactive assessment

	/2 lab		sequence: Cross correlation and auto correlation		• Editorial periodic test Direct assessment
17th , 18th	2 lecture /2 lab		Frequency domain representation : Find Frequency response	Lecture , lab	
19th ,20th 21st	2 lecture /2 lab		Discrete Fourier transform (DFT), Linear convolution using DFT, Invers Discrete Fourier transform (IDFT)	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
22nd,23rd , 24 th	2 lecture /2 lab		Fast Fourier transform(FFT): Butterfly computation , Invers Fast Fourier transform (IFFT)	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
25 th,26 th , 27 th	2 lecture /2 lab		Introduction to Z transform: Definition of Z transform and ROC, Properties of Z transform, Inverse Z transform, application of Z transform(pole& zero plot ,causality and stability of Z transform, solution of difference equation using Z transform	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
28 th , 29 th,30 th	2 lecture /2 lab		Realization of digital filter: Basic FIR filter structure, direct form of FIR structure, Cascaded form of FIR structure, Basic IIR filter structure, direct form of IIR structure, Cascaded form of IIR form of IIR structure, Parallel structure	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
12. Infrastructure					

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1- John G. Proakis , Dimitris K Manolakis Digital signal processing: principles algorithms and applications. Pearson; 4 edition (April 7, 2006).
Special requirements (include for example workshops, periodicals, IT software, websites)	1-Hayes, Monson H. Digital signal processing Tata McGraw-Hill edition 2009
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	Laptop for each student
Minimum number of students	27
Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	*Middle Technical University*
2. University Department/Centre	*Electrical Engineering Technical College \ Computer Engineering Technique*
3. Course title/code	Electronic System Simulator
4. Programme(s) to which it contributes	2020\2021
5. Modes of Attendance offered	Lecture \ laboratory
6. Semester/Year	Year
7. Number of hours tuition (total)	90
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. knowledge and understanding of the design of digital circuits and analysis	
2. knowledge and understanding of the uses of digital circuits	
3. Learn how to design circuits using sequential synchronization software	
4. knowledge and understanding of the design using the algorithm functions	
5. know how the non-sequential design using synchronization software	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
1. knowledge and understanding of the design of digital circuits and analysis
2. knowledge and understanding of the uses of digital circuits
3. Learn how to design circuits using sequential synchronization software
4. knowledge and understanding of the design using the algorithm functions
5. know how the non-sequential design using synchronization software

B. Subject-specific skills
1. designing digital circuits simplest and best image
2 - Simulation of electronic CNC systems
3 - digital circuit analysis and knowledge of its working methods and their uses
4- circles container design parts of evicting non-digital and digital enter values in ways that certain designs and as required

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which the development of the students knowledge
Laboratory and practical workshops: that provide everything he needs from the student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to persons and property
Systematic training: systematic training aims to provide the experience the student and the labor market to enable the student to understand the practical application of curricula he studied.

Assessment methods

Interactive Rating: Rating process where the ditch directly between the student and teaching and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process.
Periodic tests editorial: The availability of these tests the knowledge of a faculty member for over a follow-up to the students to content academy and how to interact with information and observations given by teaching students.
Quarterly exam: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester, both academic and skill
The final exam: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year, both academic and skill.

C. Thinking Skills
C1. Planting the spirit of creativity among students and to ensure that find them innovative solutions to various problems
C2. Students develop the ability to work together effectively as teams graduated distinct results.
C3. Sense of responsibility among students and psychological configuration to carry the burden on their shoulders development.

C4. Development to ensure the values and perseverance to get the job
Teaching and Learning Methods
Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate creative side of the students. Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and stimulate students to instead of all the efforts the crisis of the work of the various conditions and with several people.
Assessment methods
Direct assessment: Where is this Rating by faculty members directly and through observation of the interaction of students and their application of section sentimental ad valorem targets and record their observations about it Operation projects and graduation projects: is assessing the student's ability to ACCT and to work in teams, consequences and solutions to various scientific problems facing students.

D. General and Transferable Skills (other skills relevant to employability and personal development) 1- designing digital circuits simplest and best image 2- simulate electronic CNC systems 3- digital circuit analysis and knowledge of its working methods and their uses 4- circles container design parts of evicting non-digital and digital enter values in ways that certain designs

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd, 3rd, 4th	16	Logic design with MSI component	Logic design with MSI component	lecture laboratory	Oral exam, paper exam , lab. Report
5th, 6th, 7th, 8th 9th, 10th,	18	Synchronous sequential networks	Synchronous sequential networks	lecture laboratory	Oral exam, paper exam , lab. Report
11th, 12th 13th, 14th, 15th, 16th 17th	21	Algorithm state machine	Algorithm state machine	lecture laboratory	Oral exam, paper exam , lab. Report
18th, 19th, 20th 21,22 23rd, 24th, 25t 26th, 27th, 28th 29th, 30th	39	Asynchronous sequential networks	Asynchronous sequential networks	lecture laboratory	Oral exam, paper exam , lab. Report

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	**"Modern electronic instrumentation and measuring techniques",** Cooper D & A D Helfrick
Special requirements (include for example workshops, periodicals, IT software, websites)	1. **"Electronic Instrumentation",** H. S. Kalsi 2. **"Electronic Instrumentation and Measurements",** David A Bell
Community-based facilities (include for example, guest Lectures , internship , field studies)	**1- "Principles of measurement systems",** John P. Beately **2- Electronics & electrical measurements,** A K Sawhney, , Dhanpat Rai & sons http://www.academia.edu

13. Admissions	
Pre-requisites	No special requisites
Minimum number of students	30
Maximum number of students	20

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	College of electrical technique
2. University Department/Centre	Computer engineering techniques
3. Course title/code	engineering analysis
4. Programme(s) to which it contributes	2020\2021
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	year
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
Article to aim that the student be able to 1. solving equations sports complex in several ways	
2. knowledge of mathematical functions to convert from the time domain to the frequency domain process	
3. knowledge of mathematical functions to convert from the field to the deterioration of the time domain process	

4. knowledge and understanding of how the complex functions analysis and resolution
5. know how to solve the derivatives different analytical methods 6. knowledge and understanding of how to solve matrices

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding
A1. Knowledge transfers from the time domain to the frequency domain and vice versa using Laplace
A2. Understand the theoretical applications of Laplace
A3. knowledge and understanding of the way the transfers using a Z -transform and how to use them in the field of communications
A4. knowledge and understanding of the different statistical methods used to solve mathematical equations
A5. knowledge and understanding of ways to put the possibilities to reach the best solution
A6. knowledge and understanding of ways to solve numerical arrays
B. Subject-specific skills
B1.- Calculate various mathematical equations complex ones and Statistics
B2. solving equations using MATLAB software
B3. transfer equations of the time domain to the frequency domain, and vice versa, and how to use them in practical applications B4- converter functions in intermittent field and take advantage of them in the process communication applications
Teaching and Learning Methods
Academic lectures: providing a solid foundation upon which to develop cognitive balance for students

Practical laboratory:, which provides each student Maihtaj him the expertise to help develop practical skills side and consolidate the principles necessary to carry out the projects correctly

Assessment methods

Interactive Rating: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester Bjanbhe academic skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year Bjanbhe academic skills

C. Thinking Skills

C1. implant the spirit of creativity among students and to ensure that find them innovative solutions to various problems

C2. students develop the ability to work together effectively as teams come out excellent result

C3. sense of responsibility among students and psychological configuration to carry the burden on their shoulders Development

C4. development to ensure the values and perseverance to get the job done to reach satisfactory results

Teaching and Learning Methods

Stimulate the creative side of the students and that by asking various scientific problems and the demand of the students find appropriate scientific solutions to them in different ways
Develop a spirit of cooperation between the students, through the formation of working teams and motivate the students to exert all the necessary conditions for the work of the various efforts and with several people

Assessment methods
Direct assessment: Where is this assessment by the teaching directly and through NOTE student interaction during the lecture and install notes about it Practical projects is to assess the student's ability to achievement and creativity and to work in teams, consequences and solutions to various scientific problems

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. transfer equations of the time domain to the frequency and vice versa.
D2. analysis equations and their use in the field of communications
D3. find different solutions to complex mathematical equations
D4 .arrays and analyze and solve practical ways to take advantage of them

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2,3,4,5,6,7	28	Knowledge transfer from the time domain to the frequency domain, knowledge of the theories and the characteristics of this conversion and methods of their application	Laplace transform,properties,theoremand applications	Lecture,laboratory	Oral Questions, daily exam
,8,9,10,11,12 13,14	28	Knowledge conversion modes using the Z-transform with features and applications	Z-transform, properties, theorems, and applications	Lecture,laboratory	Oral Questions, daily exam
,15,16 18,19,	20	Solving mathematical equations by the possibilities, knowing the statistics methods	Probability (Basic terminology, probability and set notation, law of probability, independent events) , Statistics(Graphical representation, measure of central tendency, measure of dispersion)	Lecture,laboratory	Oral Questions, daily exam

,20,21 22,23	16	Learn methods of different accounts of the equations	Numerical computations (bisection method, false position method, Newton-Raphson method, solution of algebraic and transcendental equations, solution of linear simultaneous equations 1)Direct methods a)Gauss elimination B)Gauss Jordan 2)Iterative method a)Jacobi's B)Gauss-seidel iteration)	Lecture,laboratory	Oral Questions, daily exam
24,25	8	Learn methods of solving nonlinear equations	Solution of nonlinear equation (Newton-Raphson method)	Lecture,laboratory	Oral Questions, daily exam
,26,27 28	12	Knowledge of the different ways to solve engineering analyzes derivatives	Numerical solution of ordinary differential equation (Picard's , Euler's method)	Lecture,laboratory	Oral Questions, daily exam
29,30	8	Learn methods	Matrices	Lecture,la	Oral Questions,

		of solving various matrices and solving equations using matrices	(Matrix operations, related matrices, solution of linear system of equations, linear transformations, Cayley-Hamilton theorem)	boratory	daily exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Higher Engineering Mathematics by Dr. B.S. Grewal
Special requirements (include for example workshops, periodicals, IT software, websites)	1-Higher Engineering Mathematics by Dr. B.S. Grewal www.ocw.mit.edu www.math.uiowa.edu
Community-based facilities (include for example, guest Lectures , internship , field studies)	1-Higher Engineering Mathematics by Dr. B.S. Grewal 2-An introduction to Numerical analysis by David F. Mayers

13. Admissions	
Pre-requisites	No requisites
Minimum number of students	45
Maximum number of students	56

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Power electronics (PE)
4. Programme(s) to which it contributes	Computer Electronics & computer networks
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the third stage of the computer electronics branch with information and prepare them to be able to: 1. To know what is the purpose of PE, PE devices and types of PE systems. 2. To design ac to dc converter (rectifier). Single and three phase rectifiers. 3 Thyristor commutation circuits'. RC, RL and LC transient analysis. 4. Ac to ac and dc to ac converter (inverter). DC chopper like Buck, Boost and Buck-Boost 5. Switch-mode power supply and DC drive.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Teaching what are the purpose of PE system and types of PE devices used in this field. Learning what are the types of PE circuits like rectifier ac to ac converter. Transient analysis of RC, RL, LC and RLC. Learn how to design ac to ac converter and dc to ac inverter (single and three phase inverter). Learn how to design dc to dc converter (chopper) and how to control the speed of DC motor (DC drive).

B. Subject-specific skills

Design of a rectifier which feeds high inductive load like large DC motor.
How to find the average and RMS value of a periodic signal.
Design ac to ac converter and dc to ac converter (inverter).
How to design switch-mode power supply using dc to dc converter (chopper)
How to control the speed of a DC motor.

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students knowledge
Laboratory and practical workshops: that provide everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of power electronic system upon which faculty members evaluate the teaching and learning process
Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills

C. Thinking Skills

C1. Planting the spirit of creativity and innovation among students
C2. develop a sense of responsibility for students
C3. Development diligence and perseverance to get the job done to reach satisfactory results values
C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it

Practical projects is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1 - design of single and three phase rectifier.

D2- how to choose the appropriate PE devices used in the circuits.

D3-how to drive some rules without depending upon the standard equations.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
2,1	2 lecture /2 lab		Power electronics devices and types of power electronics systems and their applications	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
3,4,5,6, 7	2 lecture /2 lab		Single and three phase rectifier using thyristors and diodes and the firing circuits design	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
8.9	2 lecture /2 lab		DC line commutations circuits and transient analysis	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
10,11, 12	2 lecture /2 lab		AC voltage controller and on-off control	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
13,14, 15	2 lecture /2 lab		Average and RMS value of a periodic signal and types of firing circuits of the thyristor.	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
16.17, 18,19	2 lecture /2 lab		Dc to dc converter (chopper) -Buck -boost Buck-boost	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
20,21	2 lecture /2 lab		Switch-mode power supply(SMPS) Flyback (SMPS)	Lecture , lab	
22,23, 24.25	2 lecture		Inverter (dc to ac converter)	Lecture , lab	• Interactive assessment

	/2 lab		Single and three phase inverter		• Editorial periodic test Direct assessment
26,27, 28	2 lecture /2 lab		DC machine analysis DC motor drive	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
29,30	2 lecture /2 lab		Fourier series analysis for signal waveforms to find their harmonics	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Power electronics systems by Lander
Special requirements (include for example workshops, periodicals, IT software, websites)	Power electronics and application by Rashid
Community-based facilities (include for example, guest Lectures , internship , field studies)	Power electronics cock book by Rashid

13. Admissions	
Pre-requisites	electronic components, Laptop for each student
Minimum number of students	30
Maximum number of students	40

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Dept. of Computer Techniques/ 3rd year Networks and Electronics branch
3. Course title/code	Real-Time System Design
4. Programme(s) to which it contributes	3rd Year / Networks and Electronics majors.
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. Introduce the student to the concept of Real Time systems Design	
2. To know major distinction between systems and real-time systems	
3. To introduce the students to the components of real-time systems	
4. Familiarize the students with the problem of clock-speed and the need for matching ccts.	
5. To learn on how to think in terms of peripheral interface devices (PIDs).	
6. Learn how to do Input/output pin expansion.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods

A- Knowledge and Understanding
A1- Essence of Real-Time systems
A2- Components of a real-time system.
A3- Pin scarcity problem
A4- Pin expansion (input, output)
A5- A/D, D/A circuits: how to deal with real world signals
A7- PIDs: solving the clock-speed mis-match.
A8- Familiarize the students with the concept of interrupts.
.

B. Subject-specific skills
B-1 - Preparation of technical engineers with high skills in the field of Real-Time systems especially with the growth that is expected in the field of IoT and the emerging need for embedded engineers.

B-2 Build embedded systems both on the hardware and software levels.

Teaching and Learning Methods

Academic lectures: This a design class hence, the teaching is based on the active-participation principle where the students are faced with a problem formulation, and a pool of suggested answers is collected. The suggestions are then discussed one by one from practicality perspective. A candidate solution is chosen. The process is repeated for every-topic in the class.

Practical laboratory: The students are taught embedded system programming as they design, build, and code their own systems.

Assessment methods

Interactive tests: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester for academic and skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year for academic and skills

C. Thinking Skills

C1- Implant the spirit of creative thinking among students and to have as their de-facto thinking mode in every design class.
C2- Rely on each other strengths in the design process as they work as teams.
C3- Develop self-awareness as well task-awareness in handling every-day design tasks.

Teaching and Learning Methods

As with every-design class, there is more than one solution. Hence, the students are motivated to come-up with all the possible answers. Then, they are eliminated one-by-one in a collaborative thinking process, where the students have to co-participate, under the principle of teamwork, in eliminating the proposed ideas/designs one by one and choosing a sole candidate solution which best fits the problem.

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through note student interaction during the lecture and install notes about it
Practical projects are used to assess the student's ability in achievement, creativity, as well as being an effective team-member.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- Prepare the student for the incoming need of Embedded engineers.
D2- Build custom hardware with the supporting software that are needed for automation in factories and other industrial installments.
D3- To work as embedded engineers.

11. Course Structure					
Week	Hours/week	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd,	2 theory/ 2 lab		Definition of RTS Systems vs RTS RTS c/c	Lecture, laboratory	Questions oral, daily exam
3rd	2 theory/ 2 lab		Signals: types interpretations	Lecture, laboratory	Questions oral, daily exam
4th	2 theory/ 2 lab		Sensors and transducers	Lecture, laboratory	Questions oral, daily exam
5th, 6th, 7th, 8th,	2 theory/ 2 lab		A/D converters: principles circuits designs	Lecture, laboratory	Questions oral, daily exam
9th, 10th, 11th, 12th,	2 theory/ 2 lab		D/A converters: Principles circuits designs	Lecture, laboratory	Questions oral, daily exam
13th, 14th, 15th, 16th	2 theory/ 2 lab		Input Output Expansion Tri-state buffers Output Latching Pseudo-code circuit design in/out	Lecture, laboratory	Questions oral, daily exam
17th, 18th	2 theory/ 2 lab		PIDs: The need for PIDs Designs using PIDs (general principle)	Lecture, laboratory	Questions oral, daily exam
19th, 20th	2 theory/ 2 lab		8155 PID internal structure commands designs	Lecture, laboratory	Questions oral, daily exam
21st, 22nd, 23rd	2 theory/ 2 lab		Timers, Prog-timers	Lecture, laboratory	Questions oral, daily exam
24th, 25th	2 theory/ 2 lab		Interrupts	Lecture, laboratory	Questions oral, daily exam
26th , 27th	2 theory/ 2 lab		DMA	Lecture, laboratory	Questions oral, daily exam
28th, 29th, 30th	2 theory/ 2 lab		Serial I/O	Lecture, laboratory	Questions oral, daily exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	TIME SYSTEMS BY: John A. Stankovic, 2002
Special requirements (include for example workshops, periodicals, IT software, websites)	Practical Introduction to RTS for undergraduate engineers. BY: Douglas W. Harder. 2014.
Community-based facilities (include for example, guest Lectures , internship , field studies)	https://www.ces.tech/
13. Admissions: Add Intro for the embedded operating systems to the curriculum. To dedicate 5 to 6 weeks for the embedded operating systems	
Pre-requisites	Computer architecture, Electronics 1 and 2, Digital Design 1 and 2, C/C++ programming.
Minimum number of students	10 students
Maximum number of students	30 students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	College of Electrical & Electronic Engineering Techniques
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Advanced Computer Technology
4. Programme(s) to which it contributes	Types of recent Microprocessors and their Architecture
5. Modes of Attendance offered	Lecture , Lab
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the 4th stage of the two branches with information and prepare them to be able to: 1. The µP and its architecture and the addressing modes 2. Paging mechanism, Segment translation and Page translation 3 Cache memory, Cache organization, Fully associative, Direct mapped and Set associative 4. Cache memory used for 80386 - Direct Maps - Two-way set associative 5. Intel's Pentium and its Features	

6. Pentium pro, Out of order execution
7. Other Pentium processors, Core Processor

10· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding

A1. Internal organization of computers
A2. Protected mode memory addressing, Selectors and descriptors
A3. Descriptor and page table entries
A4. Paging mechanism
A5. Major changes in the 80386
A6. Cache memory used for 80386
A7. Pipelining design Techniques
A8. Pentium processors

B. Subject-specific skills

B1.Calculating the physical memory addresses using the segmentation and paging methods.
B2.working and writing programs in the real mode.
B3.desig of different cache organizations for different kinds of microprocessors.

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students' knowledge
Laboratory and practical workshops: that provides everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process.
Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students.
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills.

C. Thinking Skills

C1. Planting the spirit of creativity and innovation among students
C2. develop a sense of responsibility for students
C3. Development diligence and perseverance to get the job done to reach satisfactory results values
C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students.
Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people.

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it.
A practical project is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1.writing programs in the assembly language
D2.calculating the physical address in the real mode and protected mode
D3.desiging of different sizes of caches for different organization methods
D4.working with out of order execution (oooe) algorithm

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2,3	2 lecture /2 lab		Introduction to computers and assembly programing	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
4,5	2 lecture /2 lab		The µP and its architecture . Addressing modes	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
6,7	2 lecture /2 lab		Protected mode memory addressing . Selectors and descriptors . Local and global descriptor tables	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
8,9	2 lecture /2 lab		Descriptor and page table entries	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
10,11	2 lecture /2 lab		- Memory paging - Virtual memory	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
12,13,14	2 lecture /2 lab		- Paging mechanism . Segment translation . Page translation	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
15,16,17	2 lecture /2 lab		Major changes in the 80386, Hardware organization of the memory address space	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
18,19,20 ,21	2 lecture /2 lab		Cache memory - Cache organization . Fully associative . Direct mapped . Set associative	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
22,23	2 lecture /2 lab		Cache memory used for 80386 - Direct Maps - Two-way set associative	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
24,25	2 lecture /2 lab		Enhancements of 80386, Pipelining design Techniques	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
26,27	2 lecture /2 lab		Intel's Pentium . Features of the Pentium	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment
28,29,30	2 lecture /2 lab		Pentium pro . Out of order execution Core processor	Lecture , lab	Interactive assessment Editorial periodic test Direct assessment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	***The 80386, 80486 and Pentium Processor*** By: Walter A. Triebel
Special requirements (include for example workshops, periodicals, IT software, websites)	***The 80x86 IBM Pc and Compatible Computers (Volumes I & II)*** By: Mohammed Ali Mazidi
Community-based facilities (include for example, guest Lectures , internship , field studies)	***Intel Microprocessors*** By: Barry B. Brey

13. Admissions	
Pre-requisites	Laptop for each student
Minimum number of students	20
Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Advanced Digital Electronics /
4. Programme(s) to which it contributes	Computer Electronics
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the fourth stage of computer electronics branch and prepare them to be able to: 1. study and analysis of the work of programmable logic devices 2. various simple and complex using a hardware description language in digital circuits design 3. Implementation of various simple and complex digital circuits using FPGA 4. Work on the implementation of digital circuits using FSM 5. studying and analysis simulation results to ensure their validity	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1. Knowledge and understanding of interior design for PLDs
A2. Studying the Hardware description language (VHDL)
A3. understanding the work of FPGA
A4. Knowing and understanding the work of FSM

B. Subject-specific skills
B1. Design digital circuits using HDL
B2. Writing and implementation of FSM
B3. Design and implementation of digital circuits on FPGA

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students knowledge
Laboratory and practical workshops: that provide everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process
Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills

C. Thinking Skills
C1. Planting the spirit of creativity and innovation among students
C2. develop a sense of responsibility for students
C3. Development diligence and perseverance to get the job done to reach satisfactory results values
C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it

Practical projects is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Digital circuits designed using HDL

D2. designs implementation on a FPGA

D3. finding the shortest paths to FSM

D4. finding result using simulator and study it to validate designs

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2 lecture /2 lab		Introduction to FPGA	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
3,2	2 lecture /2 lab		Programming technologies	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
6,5,4	2 lecture /2 lab		Types of FPLDs	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
7	2 lecture /2 lab		FPGA architecture	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
8	2 lecture /2 lab		Programming (Configuring) an FPGA	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
9	2 lecture /2 lab		Introduction to VHDL Fundamental VHDL Units: • Library • Entity • Architecture	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
11,10	2 lecture /2 lab		Data types: pre-defined data types, user-defined data types	Lecture , lab	

12	2 lecture /2 lab		Operators, data attributes, signal attributes	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
14,13	2 lecture /2 lab		Concurrent code	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
16,15	2 lecture /2 lab		Sequential code	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
18,17	2 lecture /2 lab		State machine	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
,20,19 21	2 lecture /2 lab		Packages and components	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
,23,22 24	2 lecture /2 lab		Functions and procedures	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
,26,25 ,28,27 30,29	2 lecture /2 lab		Design examples	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Circuit design with VHDl bt pedroni Digital Design with CPLD Application and VHDL by Dueck

Special requirements (include for example workshops, periodicals, IT software, websites)	Circuit design with VHDl bt pedroni Digital Design with CPLD Application and VHDL by Dueck
Community-based facilities (include for example, guest Lectures , internship , field studies)	Circuit design with VHDl bt pedroni Digital Design with CPLD Application and VHDL by Dueck

13. Admissions	
Pre-requisites	Laptop for each student
Minimum number of students	20
Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Computer and Network Security
4. Programme(s) to which it contributes	computer networks
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the fourth stage of two branches with information and prepare them to be able to: 1. Knowledge the basics of information security in the telecommunications 2. Studying means and methods that must be followed to protect the computers to access them from unauthorized tampering in it. 3. Protection of data and databases from threats. 4. The protection of a network of computers, especially the private networks from malicious attacks by activating investment and network protection protocols 5. Study and analysis of asymmetric encryption algorithms Caser, substitution, vigenere,	

affine, OTP, Hill cipher, playfair, transposition

6. Studying the concept of code analysis and give an example of the code substitution
7. Studying and analysis of asymmetrical algorithms RSA

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1. Knowledge the basics of information security in the telecommunications A2. Studying means and methods that must be followed to protect the computers to access them from unauthorized tampering in it

A3. Protection of data and databases from threats.

A4. The protection of a network of computers, especially the private networks from malicious attacks by activating investment and network protection protocols

A5. Study and analysis of asymmetric encryption algorithms Caser, substitution, vigenere, affine, OTP, Hill cipher, playfair, transposition

A6. Studying the concept of code analysis and give an example of the code substitution

A7. Studying and analysis of asymmetrical algorithms RSA

B. Subject-specific skills

B1. Design controllers using PID control theory

B 2. write and execute algorithms to know systems stability

B 3. design and run controllers circuits using emulator environment

B4.calculating stability of the various systems

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students knowledge

Laboratory and practical workshops: that provide everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process

Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students

Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills

Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic

skills

C. Thinking Skills
C1. Planting the spirit of creativity and innovation among students
C2. develop a sense of responsibility for students
C3. Development diligence and perseverance to get the job done to reach satisfactory results values
C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students
Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1- The design and implementation of programs language C ++ in addition to the language of MATLAB
D2- Provide a laptop for each student instead of the disk top to prevent electric problems
D3- using modern scientific references

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1و2و3	2 lecture /2 lab		**Symmetric Ciphers model: plaintext, encryption algorithm, secret key, cihpertext, decryption algorithm, A Model of conventional encryption.** **Cryptography, Cryptanalysis, block and stream cipher**	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
4	2 lecture /2 lab		**Caeser Cipher The affine Cipher**	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
5و6	2 lecture /2 lab		**Mono alphabetic substitution ciphers Shift ciphers**	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
7	2 lecture /2 lab		**Hill cipher**	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
8	2 lecture /2 lab		**Playfair cipher**	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
9	2 lecture /2 lab		**Polyalphabetic ciphers Vigenere cipher**	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
10و11و 12و13	2 lecture /2 lab		**The Transposition cipher Affine cipher** otp	Lecture , lab	
14و15و 16	2 lecture		**Cryptanalysis of a Symmetric key**	Lecture , lab	• Interactive assessment

	/2 lab				• Editorial periodic test Direct assessment
17	2 lecture /2 lab		**Euclid's Algorithm**	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
18و19	2 lecture /2 lab		**SYMMETRIC-KEY ALGORITHMS** **-DES—The Data Encryption Standard, hers** **-16 round Feistel system**	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
20و21و 22	2 lecture /2 lab		**PUBLIC-KEY ALGORITHMS,** **-RSA,** **- Other Public-Key Algorithms**	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
23و24و 25و26و 27	2 lecture /2 lab		**AUTHENTICATION PROTOCOLS,** **-Authentication Based on a Shared Secret Key,** **-Establishing a Shared Key: The Diffie - Hellman Key Exchange,** **-Authentication Using a Key Distribution Center,** **-Authentication Using Kerberos,** **- Authentication Using Public-Key Cryptography**		• Interactive assessment • Editorial periodic test • Direct assessment
28	2 lecture /2 lab		**OSI security Architecture , a model for network security** **EMAIL SECURITY**		• Interactive assessment • Editorial periodic test • Direct assessment
29و30	2 lecture /2 lab		**PROTECTION SERVICES:** **OS protection service: protected objects and methods of OS protection, security of OS, memory and addressing protection, fence protection** **Database protection service:**		• Interactive assessment • Editorial periodic test Direct assessment

			Network protection service: IP and E-Commerce protection, VPN and next generation networks protection		
					•

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1- Cryptography and network security: principles and practice(3rd edition), Author: Stallings, William. Year: 2003
Special requirements (include for example workshops, periodicals, IT software, websites)	1- Computer security: Art and science . Author: Matthew Bishop, year: 2003 2- Handbook of cryptography
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	Laptop for each student
Minimum number of students	27
Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Smart System
4. Programme(s) to which it contributes	Computer Electronics
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the third stage of two branches with information and prepare them to be able to: 1. Knowledge of artificial neural networks 2. The ability to choose artificial neural network 3. Knowledge of the learning algorithms in artificial neural networks 4. Identify the learning algorithms in artificial neural networks 5. Identify the genetic algorithm search 6. The ability to identify the types of genetic algorithms	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1. Knowledge of artificial neural networks
A2. The ability to choose artificial neural network .
A3. The ability to choose artificial neural network
A4. Identify the learning algorithms in artificial neural networks
A5. Identify the genetic algorithm search
A6. The ability to identify the types of genetic algorithms

B. Subject-specific skills

B1. Design and implementation of simple neural network using programming language MATLAB
B 2. The ability to neural network programming using MATLAB
B 3. Programmable modes and types of genetic algorithms and implementation programming language requirement

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students knowledge
Laboratory and practical workshops: that provide everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process
Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills

C. Thinking Skills

C1. Planting the spirit of creativity and innovation among students
C2. develop a sense of responsibility for students
C3. Development diligence and perseverance to get the job done to reach

satisfactory results values
C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1 design controller of type PID operations
D2-controlling different system and make sure they reach the stable satet and stay satble
D3-finding systems response for different types of inputs and study stability

د1- تصميم برامج ابسط انواع الشبكات العصبية وهي الدوائر المنطقية
د2-تصميم وتنفيذ برامج خوارزميات الشكبات العصبية
د3-تصميم وتنفيد برامج الخوارزميات الجينية
د4-استخدام لغة البرمجة الماتلاب لزيادة مهارة الطالب في البرمجة في مجال الانظمة الذكية

11. Course Structure					
Week	Hours	ILOs		Teaching Method	Assessment Method
2,1	2 lecture /2 lab		Introduction and role of ANNs, fundamentals of biological Neural Network, basic principles of ANNs and their early structures	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
3	2 lecture /2 lab		Properties of ANN, advantage, and disadvantage	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
4و 5و 6و 7	2 lecture /2 lab		network architectures, logic gates	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
8و 9و 10	2 lecture /2 lab		Types of learning rules, learning algorithms, training styles	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
11و 12و 13و 14	2 lecture /2 lab		Hub , Adaline, Mdaline, delta rule	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
16,15	2 lecture /2 lab		Important perception function, neuron model, perception architecture, learning rules, training (train)	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
17و 18	2 lecture /2 lab		The back propagation learning procedure, derivation of the BP algorithm, Back propagation training	Lecture , lab	

			algorithm		
19,20	2 lecture /2 lab		Search algorithm, Genetic algorithm	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
,22,21 24,23	2 lecture /2 lab		Type of operators, population, selection, crossover, crossover rate, mutation, mutation rate	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
,26,25 27	2 lecture /2 lab		Population, selection, crossover, and mutation algorithms	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
28	2 lecture /2 lab		Application of genetic algorithms	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
30و29			Advantage and disadvantage of Genetic algorithms		•

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1- Fundamental of neural network ; architectures , algorithms, applications, Laurene Fausette. 2- Introduction to Genetic algorithms; S.N.Sivanandam · S.N.Deepa; Springer 2008.
Special requirements (include for example workshops, periodicals, IT software, websites)	1- Fundamental of neural network ; architectures , algorithms, applications, Laurene Fausette. 2- Introduction to Genetic algorithms; S.N.Sivanandam · S.N.Deepa; Springer 2008
Community-based facilities (include for example, guest Lectures , internship , field studies)	
13. Admissions	
Pre-requisites	Laptop for each student
Minimum number of students	27

Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Computer Engineering Technical / protocols Networks Computer
3. Course title/code	Computer Networks protocols
4. Programme(s) to which it contributes	Fourth class of Telecommunications Networks Computer
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. Know the types of computer networks	
2. Know the types of devices of Computer Networks protocols	
3. Learn methods of linking and layering computer networks	
4. Know how to relay information through computer networks protocols	
5. Know the types of protocols and programs that is appropriate for computer networks depending on the desired application.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

1. Understand the need of layering in Networked computing
2. Understand the OSI model and the TCP/IP model
    a. Understand the function protocols and their role at each layer.
        i. TCP protocol
        ii. UDP protocol
3. Understand the role of header in communication between layers
4. Understand how data sent from one host arrive to the target host.

B. Subject-specific skills

B-1 - Preparation of technical engineers with high skills in the field of computer networks

B 2 - Work to enhance performance standards including the application of international standards in the field of computer engineering techniques .

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop cognitive balance for students

Practical laboratory:, which provides each student the expertise to help develop practical skills side and consolidate the principles necessary to carry out the projects correctly

Assessment methods

Interactive tests: basically to assess the student by observing the extent of interaction provides during the lecture and participation

Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching

Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester for academic and skills

Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year for academic and skills

C. Thinking Skills

C1- Implant the spirit of creativity among students and to ensure that find them innovative solutions to various problems

C2- Students develop the ability to work together effectively as teams come out excellent result

C3- Sense of responsibility among students and psychological configuration to

carry the burden on their shoulders Development
C4- Development to ensure the values and perseverance to get the job done to reach satisfactory results

Teaching and Learning Methods

Stimulate the creative side of the students and that by asking various scientific problems and the demand of the students find appropriate scientific solutions to them in different ways
Develop a spirit of cooperation between the students, through the formation of working teams and motivate the students to exert all the necessary conditions for the work of the various efforts and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through note student interaction during the lecture and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams, consequences and solutions to various scientific problems

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1- Connect the types of computer networks
D2- Has the ability to bind to all programming and computer networking devices
D3- Maintenance feeler networks and protocols.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st , 2nd	8	Lecture, laboratory	Introduction to the OSI Reference Mode, and the TCP/IP Reference Model. Protocol Hierarchies in these models.	Knowledge of types of networks based on size and transport Technology	Questions oral, daily exam
3rd	4	Lecture, laboratory	The LANs Protocols: • Ethernet (CSMA/CD) • Fast Ethernet • Local Talk • Token Ring • FDDI ATM	Learn the most important species in the local area networks	Questions oral, daily exam
4th	4	Lecture, laboratory	The Internet Protocols • Internet Protocol (IP): (IPv4 & IPv6) • TCP UDP	Understanding the difference between the services that rely on communication, that does not rely on contact	Questions oral, daily exam
5th, 6th	8	Lecture, laboratory	The WIRELESS LANs Protocols • The Bluetooth Protocol Stack BROADBAND WIRELESS Protocols (the 802.11, and the 802.16).	Understanding of the OSI model	Questions oral, daily exam
7th	4	Lecture, laboratory	The ELECTRONIC MAIL {Message Formats, Message Transfer Protocols (SMTP (simple mail transfer protocol), Extensions ESMTP (Extended SMTP) and POP3 (post office protocol) {.	Knowledge of types of large networks and small and private	Questions oral, daily exam
8th	4	Lecture, laboratory	DNS (Domain Name System) DHCP (Dynamic Host Configuration	Knowing the size of the files by type	Questions oral, daily exam

			Protocol)		
9th-30	4	Lecture, laboratory	OTHER Protocols • RTP the real-time transport protocol, and RTCP real-time transport control • SSH secure shell • Talent telephone network • SFTP: secure file transfer protocol • SSL: secure socket layer • TLS: transport layer security • E6: Ethernet globalization protocols • NTP: network time protocol • PPP : point to point protocol	Knowing the bandwidth and speed of transmission of information	Questions oral, daily exam
29th	4	Lecture, laboratory	Network layer(Routing Algorithms)	See guidance in the network layer algorithms	Questions oral, daily exam
30th	4	Lecture, laboratory	Network layer(Broadcast Routing)	Knowledge of the routing algorithms in all directions in the network layer	Questions oral, daily exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Computer.Networking.A.Top-Down. -1 Approach 6th Edition
Special requirements (include for example workshops, periodicals, IT software, websites)	Computer Networks - A Tanenbaum - 5th -2 edition

Community-based facilities (include for example, guest Lectures , internship , field studies)	COMPUTER NETWORKING by James F. Kurose University of Massachusetts, Amherst

13. Admissions	
Pre-requisites	Introducing some communication applications and some practical applications in other fields
Minimum number of students	30 students
Maximum number of students	60 students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Computer Engineering Technicals / Computer Electronics
3. Course title/code	Computer Networks
4. Programme(s) to which it contributes	Fourth Computer Electronics
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. Know the types of computer networks	
2. Know the types of devices of Computer Networks	
3. Learn methods of linking computer networks	
4. Know how to relay information through computer networks	
5. Know the types of protocols and programs that is appropriate for computer networks depending on the desired application.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1- The student gains experience in the field of computer networks
A2- Keep pace with developments in the field of computer curriculum
A3- Strengthen the link between the department and the various segments of society .

B. Subject-specific skills
B-1 - Preparation of technical engineers with high skills in the field of computer networks
B 2 - Work to enhance performance standards including the application of international standards in the field of computer engineering techniques .

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop cognitive balance for students
Practical laboratory:, which provides each student the expertise to help develop practical skills side and consolidate the principles necessary to carry out the projects correctly

Assessment methods

Interactive tests: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester for academic and skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year for academic and skills

C. Thinking Skills
C1- Implant the spirit of creativity among students and to ensure that find them innovative solutions to various problems
C2- Students develop the ability to work together effectively as teams come out excellent result
C3- Sense of responsibility among students and psychological configuration to

carry the burden on their shoulders Development
C4- Development to ensure the values and perseverance to get the job done to reach satisfactory results

Teaching and Learning Methods

Stimulate the creative side of the students and that by asking various scientific problems and the demand of the students find appropriate scientific solutions to them in different ways
Develop a spirit of cooperation between the students, through the formation of working teams and motivate the students to exert all the necessary conditions for the work of the various efforts and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through note student interaction during the lecture and install notes about it
Practical projects is to assess the student's ability to achievement and creativity and to work in teams, consequences and solutions to various scientific problems

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1- Connect the types of computer networks
D2- Has the ability to bind to all programming and computer networking devices
D3- Maintenance feeler networks.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st	4	Lecture, laboratory	Types of computer Networks (clients server, Peer-to-peer,& Wireless networks)	Understand the types of services provided by Hbcatalhacob.	Questions oral, daily exam
2nd	2	Lecture, laboratory	classifying the computer networks (Home network, LAN, MAN, WAN, Wireless Networks,& Internet work)	Knowledge of types of networks based on size and transport Tknlologia	Questions oral, daily exam
3rd, 4th	2	Lecture, laboratory	The Reference models [1. The OSI model (design issues for the layers, connection oriented & connectionless layers services, Service Primitives, & The OSI Layers)]	Learn the OSI model and learn the difference between the services that rely on communication and services that do not rely on check Contact	Questions oral, daily exam
5th	4	Lecture, laboratory	The Reference models [2. The TCP/IP Reference Model]	Understanding TCP model / IP	Questions oral, daily exam
6th	2	Lecture, laboratory	Connection-Oriented Networks [X.25, Frame Relay, & ATM(ATM, ATM Virtual Circuits, & The ATM Reference Model)]	Understand the types of switches that rely on the presence of contact	Questions oral, daily exam
7th	2	Lecture, laboratory	LAN PROTOCOLS token bus (802.4), token ring (802.5), & Wireless LANs(802.11)]	Knowledge of local and network types	Questions oral, daily exam
8th	2	Lecture, laboratory	Encapsulation &De Encapsulation	Knowing the size of the files by type	Questions oral, daily exam
9th	2	Lecture, laboratory	Services of the Osi model. Difference between OSI.TCP Model	knowing the bandwidth and speed of transmission of information	Questions oral, daily exam
10th , 11th	2	Lecture, laboratory	Guided Transmission Media	Knowledge of types of center-carrier	Questions oral, daily exam

12th	4	Lecture, laboratory	Unguided Transmission Media (Wireless Transmission)	Knowledge of types of techniques used in telecommunication	Questions oral, daily exam
13th	6	Lecture, laboratory	IP Addressing & Subnetting	Understanding of Space Communication	Questions oral, daily exam
14th	2	Lecture, laboratory	The Public Switched Telephone Network (the subnet of the computer network)	Knowledge of types of switches and hubs for data	Questions oral, daily exam
15th	6	Lecture, laboratory	CIDR Subnetting	Knowledge of the modem components	Questions oral, daily exam
16th	4	Lecture, laboratory	Trunks and Channel Multiplexing (FDM, WDM,& TDM)	Knowledge of types of distribution of the data	Questions oral, daily exam
17th	4	Lecture, laboratory	Switching (Circuit Switching, Message Switching, Packet Switching)	Knowledge of types of switches and message	Questions oral, daily exam
18th	2	Lecture, laboratory	Data link, Functions Protocols ,servives	Understand the types of cable TV	Questions oral, daily exam
19th	2	Lecture, laboratory	The Data Link Layer [Framing (Character count, Flag bytes with byte stuffing, Starting and ending flags with bit stuffing, & Physical layer coding violations)]	Knowledge of the duties of the data layer and how to do direct data	Questions oral, daily exam
20th	4	Lecture, laboratory	Flow control, Error control, protocols CRC,Checksum, parity check.	Understand the control of data in the network transmission	Questions oral, daily exam
21st	2	Lecture, laboratory	ERROR[types of error, error detection and error detection and Correction]	Knowledge of types of errors and detected and corrected	Questions oral, daily exam
22 th, 23 th	2	Lecture, laboratory	Data Link layer Protocols (An unrestricted simplex protocol, a simplex Stop-and-Wait protocol, Sliding Window Protocols, a Protocol using Go Back N, a Protocol using Selective Repeat)	Knowledge of types of algorithms for data transfer in the data layer	Questions oral, daily exam

24 th		Lecture, laboratory	Network Layer (Store-and-Forward Packet Switching)	See guidance in the network layer algorithms	
25 th		Lecture, laboratory	Network layer(Implementation of Connectionless Service)	Understanding of the services that do not rely on communication networks layer	
26 th		Lecture, laboratory	Network layer (Implementation of Connection-Oriented Service)	Understand the services that rely on communication in the network layer	
27 th, 28 th		Lecture, laboratory	Network layer(Routing Algorithms)	Understanding of the most important algorithms that operate on direct data in the network layer	
29 th, 30 th		Lecture, laboratory	Network layer(Broadcast Routing)	Understand the types of services offered by computer networks.	

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Computer Networks - A Tanenbaum - 5th edition
Special requirements (include for example workshops, periodicals, IT software, websites)	Data Communications and Networking by McGraw-Hill Forouzan Networking Series
Community-based facilities (include for example, guest Lectures , internship , field studies)	COMPUTER NETWORKING by James F. Kurose University of Massachusetts, Amherst
13. Admissions	
Pre-requisites	Introducing some communication applications and some practical applications in other fields
Minimum number of students	30 students
Maximum number of students	40 students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Information Theory and coding
4. Programme(s) to which it contributes	Computer Electronics & computer networks
5. Modes of Attendance offered	Lectures & Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120hrs
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
a- To study the important of information system and show its facilities and limitations.	
b- To analysis all types of communication channels and study its characteristics and capacity calculations.	
c- To know the source coding using various theories that transfer the information into digital form with minimum data rate.	
d- To analysis the efficiency of each type of source code.	
e- To calculate the efficiency for each type.	
f- To study some types of channel coding, its facilities and its limitations.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding
A1.What is information theory, is it measured quantity?
A2. What are the types of communication channels related to media type?
A3. How to compress the information without losses?
A4. How to encode the information for error detection and correction?
A5.
A6.

B. Subject-specific skills
B1. Design a communication system depending on the amount of data.
B2. To measure the amount of information.
B3. Design a communication channels.

Teaching and Learning Methods

1- The theory lectures using the available training aide.
2- Employ the feedback through questions and answers.
3- Self-training through solving an exercises.
4- Applying the communication systems.
5- Design a coding system.

Assessment methods

1- Applying the daily test.
2- Conducting the self-testing by comparing the student results with the references results.
3- Conduct the semester's exam.
4- Final exam.

C. Thinking Skills
C1. The student will able to evaluate the communication system.
C2. Using the source coding methods.
C3. Remove the error from information.
C4.

Teaching and Learning Methods

1- Employ the method transmitter and receiver and check the quality of received information.
2- Apply an experiments for the theory subjects.

Assessment methods
Lecture note

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. The student will be qualify to evaluate in communication system.

D2. Evaluate the system performance and calculate the amount of noise.

D3. How to deal the modern communicatios.

D4.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2	1+2	Review	The probability	Theory	Direct questions
3,4	1+2	The relation between probability and information	The conditional probability and random variable	Theory and applications	Daily test and report
5,6,7	1+2	To identify the communication channels	The channels with and without noise	Showing the relation between reality and communication channels	What are the important of channels
8,9,10	1+2	To distinguish between symmetric and non-symmetric	symmetric and non-symmetric channels	Write a report for each channel types	Questions and answers
11,12,13	2+1	Calculate the channel capacity	The capacity of each channel	The theory lecture	Daily test
14,15	---	Semester test	----	-----	------
16,17	---	Middle holiday			
18,19,20,21	1+2	Data compression	The types of coding	The theory lecture	Daily test
22,23,24,25	1+2	Error Correction	The types of channel coding	The theory lecture and laboratory	Daily test
26,27	1+2	Connect the overall system	Review	Design a complete system	Evaluate the system
28,29,30	1+2	Final exam			

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Coding and Information Theory by Steven
Special requirements (include for example workshops, periodicals, IT software, websites)	Elements of information theory by Thomas
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	20
Maximum number of students	30

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the program specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	mobile communication
4. Programme(s) to which it contributes	Computer Electronics & computer networks
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
It is aimed at students on the fourth stage definition - Concepts and terminology used in cellular systems - The study of developments in the generation cellular system - How to design cells - How to cover all the cell by signal and at all spaces - Types of modulation signal in Cellular Communications - Wireless systems construction, design and processing of interference signals	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1- definition of concepts and terms used in cellular systems
A2- internal structural study of the cells
A3- signal analysis and how coverage in each cell
A4-compare between all generations and how they evolve

B. Subject-specific skills

B 1 -Design cellular system
B 2 - modulate a digital signal and demodulation
B 3 - how to cover the signal to all the cells
B4- design, planning and analysis of the signals for sending and receiving

Teaching and Learning Methods

- View lecture and charts
-smart board
- Scientific laboratories

Assessment methods

-Oral questions and information retrieval
-Weekly exams
-Quarterly tests
- Final exams

C. Thinking Skills

C1- student development on how to analyze the difficulties and overcome them
C 2-develop a sense of responsibility
C 3-Development diligence and perseverance to get the job done to reach satisfactory results
C4- implant the spirit of innovation among students

Teaching and Learning Methods

Ask a scientific problems and the demand from students to find more than a solution to it different scientific methods to stimulate the creative side of students

Assessment methods
-Direct assessment - Practical projects

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- work in the Mobile Telecommunications Co.
D2- design and preparation of plans for the locations and frequencies
D3- selection of the appropriate frequency band for each region and for each dimension
D 4 - Choosing the right antenna in the transmission and receipt
D5- work to reduce noise and interference between signals

11. Course Structure					
Week	Hours	ILOs		Teaching Method	Assessment Method
1,2,3	2 lecture /2 lab	Understanding of the cellular system and learn how development across multiple generations and to identify the characteristics of each generation	**Introduction to Wireless Communication System:** Evolution of mobile communications, Mobile Radio System around the world, Types of Wireless communication System, Comparison of Common wireless system, Trend in Cellular radio and personal communication, Second generation (2G) systems. Evolved Second-Generation Systems (2.5G). Third-Generation (3G) Systems. Fourth-Generation (4G) Systems. Fifth-Generation (5G) Systems	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
4,5,6 7	2 lecture /2 lab	Identify how to configure the cells and calculate the frequencies and overlapping frequencies and signal converter	**The Cellular Concept-System Design Fundamentals:** Cellular system, Hexagonal geometry cell and concept of frequency reuse, Channel Assignment Strategies Distance to frequency reuse ratio, Channel & co-channel interference reduction factor, S/I ratio consideration and calculation for Minimum Co-channel and adjacent interference, Handoff Strategies, Umbrella Cell Concept	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment

8 , 9 ,10 ,11	2 lecture /2 lab	Insurance service and network for each cell and calculate capacity	**Traffic Engineering:** Trunking and Grade of Service, Improving Coverage & Capacity in Cellular System-cell splitting, Cell sectorization	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
12 , 13 ,14, 15	2 lecture /2 lab	Calculate the signal propagation through the air and its implications	**Large scale path loss:** Free Space Propagation loss equation, Path-loss of NLOS and LOS systems, Reflection, Ray ground reflection model, Diffraction, Scattering, Link budget design,	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
16 , 17 ,18	2 lecture /2 lab	Send multiple signals and calculate delay	**Small scale multipath propagation**: Impulse model for multipath channel, Delay spread, Feher's delay spread, upper bound Small scale, Multipath Measurement parameters of multipath channels, Types of small scale Fading, Rayleigh and Rician distribution	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
19 , 20	2 lecture /2 lab	Learn the types of modulation used in the cellular system, such as QPSK, MSK, GMSK	**Modulation Techniques for Mobile Radio:** Review for basic digital modulation techniques, QPSK,MSK,GMSK,	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
21 , 22	2 lecture /2 lab	Understanding FDMA technology And Technology TDMA	**Multiple Access Techniques:** Frequency Division Multiple Access (FDMA). Time Division Multiple Access (TDMA). Spread Spectrum Multiple Access. Space	Lecture , lab	• Interactive assessment • Editorial periodic test Direct

			Division Multiple Access (SDMA)		assessment
23 , 24 , 25, 26, 27 , 28	2 lecture /2 lab	Identify the CDMA technology And everything related to the system	**Wireless Systems:** GSM system architecture, Radio interface, Protocols, Localization and calling, Handover, Authentication and security in GSM, GSM speech coding, Concept of spread spectrum, Architecture of IS-95 CDMA system, Air interface, CDMA forward channels, CDMA reverse channels, Power control in CDMA, cellular technology, GPRS system architecture	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
29 , 30	2 lecture /2 lab		**Recent trends:** Wi-Fi, WiMAX, ZigBee Networks, Software Defined Radio, UWB Radio, Wireless Ad-hoc Network and Mobile Portability, Security issues and challenges in a Wireless network.	Lecture , lab	

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	
Special requirements (include for example workshops, periodicals, IT software, websites)	- Mischa Schwartz, Mobile Wireless Communications, Cambridge University Press 2005 - J. G. Proakis, Digital Communications, 4th ed. NY: McGraw Hill, 2000
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	New kit and lab.
Minimum number of students	30
Maximum number of students	40

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Engineering Technical College
2. University Department/Centre	Dept. of Computer Techniques/4th year Electronics branch
3. Course title/code	PC Interfacing
4. Programme(s) to which it contributes	Fourth Computer Electronics
5. Modes of Attendance offered	Lecture, laboratory
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
1. Introduce the student to the concept of PC interfacing	
2. To know the PC's interfacing ports	
3. Learn interface design methodologies	
4. Advise custom interfacing ccts to handle any problem formulation.	
5. Know the types of protocols that are used in the Serial, Parallel, and USB interfacing.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods

A- Knowledge and Understanding
A1- Essence of interfacing
A2- Parallel port
A3- Serial port
A4- USB port
A5- Interface extension ccts.
A7- Interface Pseudocode
A8- Cost reduction in Interfacing
A9- The speed vs accuracy dilemma.
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B. Subject-specific skills
B-1 - Preparation of technical engineers with high skills in the field PC interfacing especially with the growth that is expected in the field of IoT.

B-2 Write interfacing programs using Java to meet the required task.

Teaching and Learning Methods

Academic lectures: This a design class hence, the teaching is based on the active-participation principle where the students are faced with a problem formulation, and a pool of suggested answers is collected. The suggestions are then discussed one by one from practicality perspective. A candidate solution is chosen. The process is repeated for every-topic in the class.

Practical laboratory: The students are taught OOP (Java), as they write their own version of the interfacing software along the year.

Assessment methods

Interactive tests: basically to assess the student by observing the extent of interaction provides during the lecture and participation
Written tests: that provides knowledge of the extent of the student's understanding and follow-up of the material and scientific observations given by teaching
Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester for academic and skills
Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year for academic and skills

C. Thinking Skills

C1- Implant the spirit of creative thinking among students and to have as their de-facto thinking mode in every design class.
C2- Rely on each other strengths in the design process as they work as teams.
C3- Develop self-awareness as well task-awareness in handling every-day design tasks.

Teaching and Learning Methods

As with every-design class, there is more than one solution. Hence, the students are motivated to come-up with all the possible answers. Then, they are eliminated one-by-one in a collaborative thinking process, where the students have to co-participate, under the principle of teamwork, in eliminating the proposed ideas/designs one by one and choosing a sole candidate solution which best fits the problem.

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through note student interaction during the lecture and install notes about it
Practical projects are used to assess the student's ability in achievement, creativity, as well as being an effective team-member.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- Prepare the student for the incoming IoT jobs which heavily rely on interfacing.
D2- Build custom hardware with the supporting software that are needed for automation in factories and other industrial installments.
D3- To work as Hardware computer engineers.

11. Course Structure					
Week	Hours/week	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd, 3rd	2 theory/ 2 lab		DC power supply, Voltage Convertors, Digital and Analog signal generators.	Lecture, laboratory	Questions oral, daily exam
4th, 5th, 6th, 7th, 8th	2 theory/ 2 lab		Parallel (Centronic) Port: Pin configuration, Internal hardware Pin groups Board Design Board Expansion	Lecture, laboratory	Questions oral, daily exam
9th, 10th, 11th, 12th, 13th	2 theory/ 2 lab		RS232 Serial Interface: Serial data transmission Serial Protocol Config RS232 Pin config Board design Board Expansion	Lecture, laboratory	Questions oral, daily exam
14th, 15th, 16th, 17th	2 theory/ 2 lab		USB Interface: USB to Microcontroller interface, USB to RS232 converter design, USB to parallel converter design.	Lecture, laboratory	Questions oral, daily exam
18th, 19th	2 theory/ 2 lab		Parallel to Serial Interface, Serial to Parallel Interface	Lecture, laboratory	Questions oral, daily exam
20th, 21st, 22nd, 23rd	2 theory/ 2 lab		A/D: Types of A/Ds A/D specs A/Ds with Parallel I/O A/D with Serial I/O Interfacing A/Ds with PC on USB, Serial, Parallel Ports.	Lecture, laboratory	Questions oral, daily exam
24th, 25th, 26th	2 theory/ 2 lab		D/A: Specs of D/A D/A ccts Interfacing D/As with PC on USB, Serial, and Parallel Ports.	Lecture, laboratory	Questions oral, daily exam

27th, 28th, 29th, 30th.	2 theory/ 2 lab		Application Projects	Lecture, laboratory	Questions oral, daily exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	PC Interfacing BY: Pei An, 1998
Special requirements (include for example workshops, periodicals, IT software, websites)	https://www.adafruit.com/ http://arduino.cc/
Community-based facilities (include for example, guest Lectures , internship , field studies)	https://www.ces.tech/
13. Admissions: Add IoT to the curriculum. To dedicate 5 to 6 weeks for the IoT module, IoTs are real world applications of PC interfacing.	
Pre-requisites	Real-Time systems, Computer architecture, Electronics 1 and 2, Digital Design 1 and 2, C/C++ programming.
Minimum number of students	10 students
Maximum number of students	30 students

TEMPLATE FOR COURSE SPECIFICATION

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Electrical Technical Engineering college
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Project management /
4. Programme(s) to which it contributes	Computer Electronics
5. Modes of Attendance offered	Lecture , Lab.
6. Semester/Year	2020\2021
7. Number of hours tuition (total)	120 hr.
8. Date of production/revision of this specification	8\6\2021
9. Aims of the Course	
The course aims to provide students of the fourth stage of computer electronics branch and prepare them to be able to: 1. study definitions of project management 2. learn methods to draw network diagrams for projects 3. The knowledge and understanding of linear programming process 4. learn methods of inventory models in management 5. know how to find the break even point 6. know and understand the maintenance	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1. Learn methods of drawing networking schemes for the project

A2. Knowledge to find the critical path of the project overall and float of the project and the early start and late

A3. Knowledge and understanding of the distribution of sources of project problems

A4. Knowledge and understanding of linear programming for project

A5 Knowledge and understand the ways of the project inventory management

A6 knowledge and understand the fee break-even point of the project

A7 K now and understand the maintenance

A8 K now andunderstand the Quality contoral

B. Subject-specific skills

B1. Drawing networking for the project in a manner critical path and pert

B2. solving equations to reduce the duration of the project -

B3 Convert the equations to linear programming using the method of grafical and the simplex

B4 Solving equations to find the breakeven

B5Solving equations to find the cost of inventory management

B6 account maintenance cost

B 7 Solving equations to calculate the quality control of the project

Teaching and Learning Methods

Academic lectures: providing a solid foundation upon which to develop students knowledge

Laboratory and practical workshops: that provide everything needed by student's experiences to help develop practical skills side and consolidate the principles necessary to carry out practical projects correctly and follow the occupational safety steps to reduce the damage caused to people and property.

Assessment methods

Interactive Rating: where it is this evaluation process directly between the student and teacher and be one of the fundamentals of feedback upon which faculty members evaluate the teaching and learning process

Periodic written tests: The availability of these tests to a faculty member about the extent of follow-up students for the academic content and how to interact with information and observations given by teaching students

Quarterly tests: Episode moderation and be to assess the student's interest and its interaction with the scientific article received during the semester academic skills

Final tests: These are the final episode to assess the student's interest and its interaction with the scientific article received during the school year academic skills

C. Thinking Skills

C1. Planting the spirit of creativity and innovation among students
C2. develop a sense of responsibility for students
C3. Development diligence and perseverance to get the job done to reach satisfactory results values
C4. scalability students to develop teamwork

Teaching and Learning Methods

Ask a scientific problems and the demand of the students to find more than a solution to it different scientific methods to stimulate the creative side of students Form working groups are evaluating the results of its work and change their structure periodically to develop a spirit of cooperation and motivate students to make every effort necessary to work under different conditions and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it

Practical projects is to assess the student's ability to achievement and creativity and to work in teams and get results and solutions to various scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Convert the tables of activity of project to network drawing
D2. Find the crtical path and total float of project
D3. Linerar programming of project
D4. finding the break – even point

11. Course Structure					
Week	Hours		Unit/Module or Topic Title	Teaching Method	Assessment Method
,1,2	8		Introduction to project mangement,	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
3,4	8		Economics and mangement for engineering	Lecture , lab	• Interactive assessment • Editorial periodic test • Direct assessment
5,6,7	12		Layoutfor factoriesand workshops productivity	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
8,9	8		Networks	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
10,11	8		Cirtical path Method(cpm)	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
13,14,15	12		Pert techique (time and cost)	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
16	4		Theresource allocation problems	Lecture , lab	
17,18	8		Linear programming grafical method	Lecture , lab	• Interactive assessment

			simplex method		• Editorial periodic test Direct assessment
19,20, 21	12		Inventory model(EOQ)	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
22	4		The break even point	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
23,24	8		The cost of inventory	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
25,26, 27	12		Maintenance policy and concepts	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
28,29	8		Quality contoral	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment
30,	4		Employer mangement	Lecture , lab	• Interactive assessment • Editorial periodic test Direct assessment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	AutoCAD 2016 Tutorial First Level 2D Fundamentals Randy H. Shih
Special requirements (include for example workshops, periodicals, IT software, websites)	Learning **AutoCAD**® 2010, Volume 1 Autodesk Official Training Guide Essentials

Community-based facilities (include for example, guest Lectures , internship , field studies)	S. choudhury" project mangement", tata McGraw hill-2003

13. Admissions	
The introduction of some of some of the practical applications in other fields	